

Dental

Abstracts

a selection of world dental literature



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Lon W. Morrey, D.D.S., editor

N. C. Hudson, assistant editor

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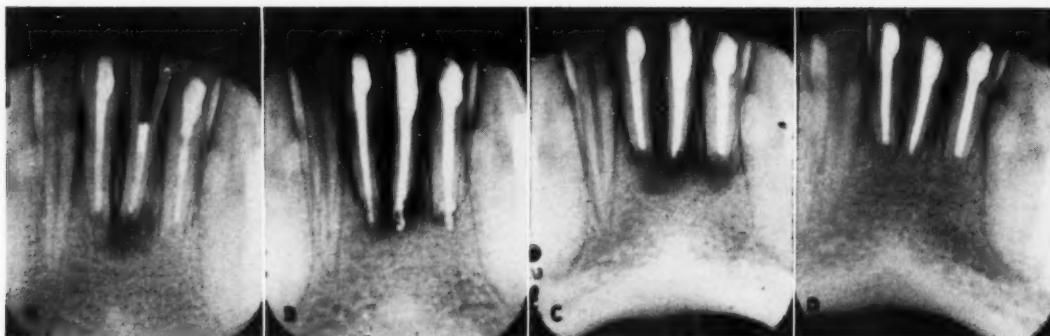
**Dental
Abstracts
has
these
purposes**

1. *To present a selection of pertinent literature representative of all points of view within the profession;*
2. *To provide, by a few hours' reading, a survey of the significant advances being made by dentistry throughout the world, as reflected in current dental literature; and*
3. *To supply enough data in each abstract and digest that the reader may determine whether he wishes to refer to the original article for more complete information.*

The abstracts are grouped in broad classifications. The specialist will learn from this periodical of work done in other fields as well as in his own. The general practitioner will be able to keep abreast of current knowledge in the various specialties. Unless otherwise indicated, the original article is in the language implied by the title of the magazine in which the article appeared.

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Case history 1 Erosion of cementum. A: Three lower anterior teeth with history of previous nonsurgical endodontic treatment which was unsuccessful. B: Teeth re-treated and filled with gutta-percha. C: Postoperative examination one week after root resections. D: Fourteen months after surgical treatment

The importance of diagnosis and treatment planning in endodontic practice

*E. James Best, * D.D.S., Chicago*

Success in endodontic practice is dependent not only on strict adherence to certain principles concerning the operative procedure, but also on a thorough and precise diagnostic investigation and a well formulated treatment program. This is particularly true in instances of complex or multiple pulpal involvements. The emphasis in the literature and other media of education for the profession has been directed to the cleansing, sterilization and filling of the root canal. The initial or preparatory phase, diagnosis, demands equal attention and skill from the practitioner if a successful result is to be obtained.

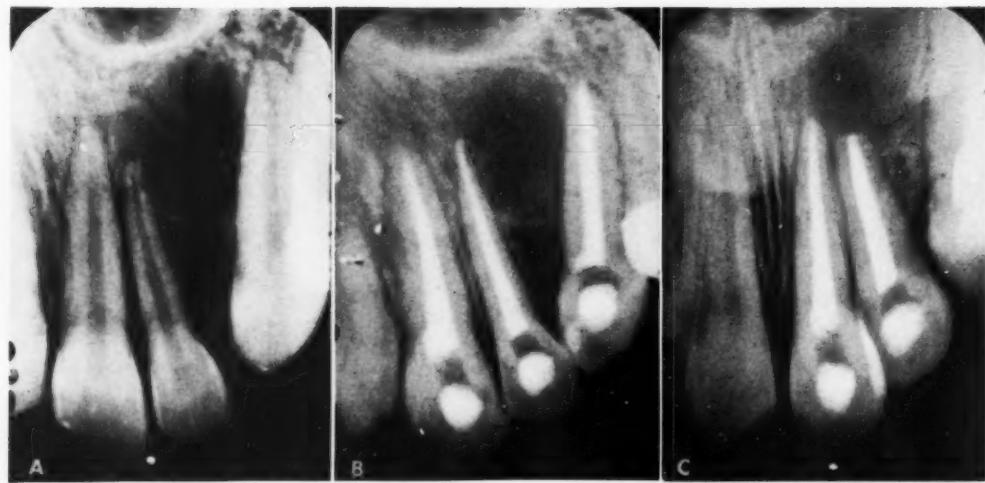
A carefully conducted diagnostic program often means the difference between locating the causative agent or being deceived by a tooth to which the pain may be referred. Furthermore, it will enable the investigator to determine if other teeth are involved, as frequently happens after traumatic injuries. A decision must first be made whether endodontic therapy or extraction is the wisest course to follow. If treatment is indicated, the dentist must decide whether a surgical or non-surgical program should be initiated. He must evaluate his clinical findings and select a sound treatment program prior to beginning pulpal therapy.

Typical case histories of successful endodontic therapy are illustrated.

Differential diagnosis of dental pain has been discussed in detail by many authors.¹⁻³ Since diagnosis is an exact science it must be conducted as such. Frequently conditions are diagnosed without sufficient thoroughness, and inaccuracy in the accumulation of vital data results. Any diagnostic investigation should include the following: (1) medical history, (2) dental history and (3) an oral examination. The oral examination should consist of: (1) a visual examination in which the color of the gingiva, swelling of the gingiva and mobility and extrusion of the teeth are checked, (2) electrical and thermal pulp vitality tests and (3) roentgenographic examination.

A brief medical history should be recorded to determine the status of the patient's health. In the presence of certain systemic diseases the decision to render endodontic therapy should be evaluated carefully. Patients for whom pulpal

Success in endodontic practice demands a precise diagnostic investigation and a careful treatment program. Even meticulous treatment can result in failure if the practitioner has not conducted a thorough diagnostic investigation.



Case history 2 Cystic lesion. A: History of traumatic injury; central incisor and cupid, as well as lateral incisor, were unresponsive when tested with vitalometer. B: Teeth treated and filled with gutta-percha. C: Immediately after root resection and periapical curettage. D: Postoperative examination ten months after surgery; bands and arch wire adapted for fixation after extensive tissue removal

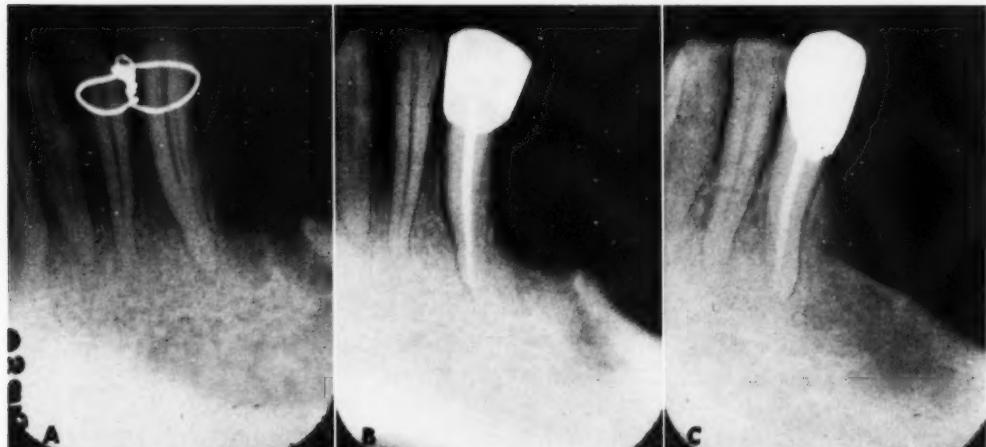


Case history 3 Re-treatment with filling extending beyond apical foramen. A: History of traumatic injury with central incisor treated non-surgically and lateral incisor untreated. Vitalometer examination showed lateral incisor was also involved. B: Both teeth re-treated and filled with gutta-percha. C: Immediately after root resection and periapical curettage. D: Twelve months after surgery



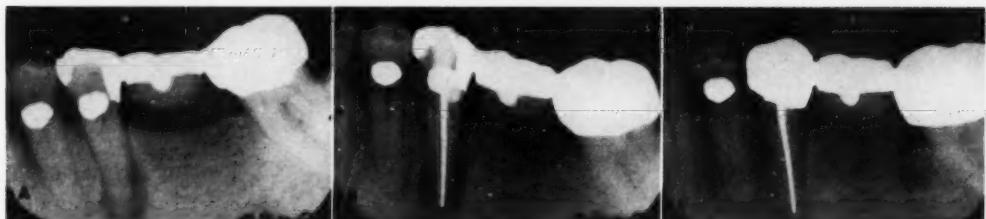


Case history 4 Two foci of infection. A: Right central and left lateral incisors with nonvital pulps. B: Immediately after nonsurgical treatment program. Both silver cones and gutta-percha fill root canals. C: Nine months after treatment. Progress of healing and repair of periapical tissue can be seen



Case history 5 Splinting for periodontal disease accompanying pulpal involvement. A: Wire ligature applied prior to beginning endodontic treatment. B: Immediately after insertion of root canal filling. The ligature was re-applied and changed periodically for ten months. C: Twelve months after endodontic treatment. Periodontal disease has also been eliminated

Case history 6 Extensive periapical involvement. A: Lower second bicuspid with extensive periapical involvement. B: Immediately after root canal was filled with silver cone. C: Roentgenogram taken twelve months after nonsurgical treatment was completed shows healing and repair of periapical tissue





Case history 7 Two foci of infection. A: Lower left first and second bicuspid with nonvital pulps. B: Immediately after root canals of the lower left first and second bicuspid were filled with silver cones and gutta-percha. C: Twelve months after treatment was completed

treatment may be contraindicated would be those with active tuberculosis, severe diabetes mellitus or acute pernicious anemia. Since the reparative processes of patients in the afore-mentioned categories have been disrupted by their systemic afflictions, a successful endodontic treatment cannot be expected. Conversely, with patients suffering from certain blood dyscrasias such as leukemia or hemophilia, the wiser decision is to treat rather than extract.

The dental history and a visual examination can be conducted concurrently. As the dentist examines the oral cavity, he should verify certain findings by questioning the patient. Frequency and intensity of pain, whenever present, usually help differentiate between a vital and a nonvital pulp. A sharp lancinating pain of rapid onset is usually associated with a vital pulp. A dull, aching, throbbing sensation, more acute when the patient is in a prone position, may point to a degenerate or necrotic pulp. Swelling, mobility and extrusion usually accompany and are the result of inflammatory changes in the supporting tissues brought about by infection.

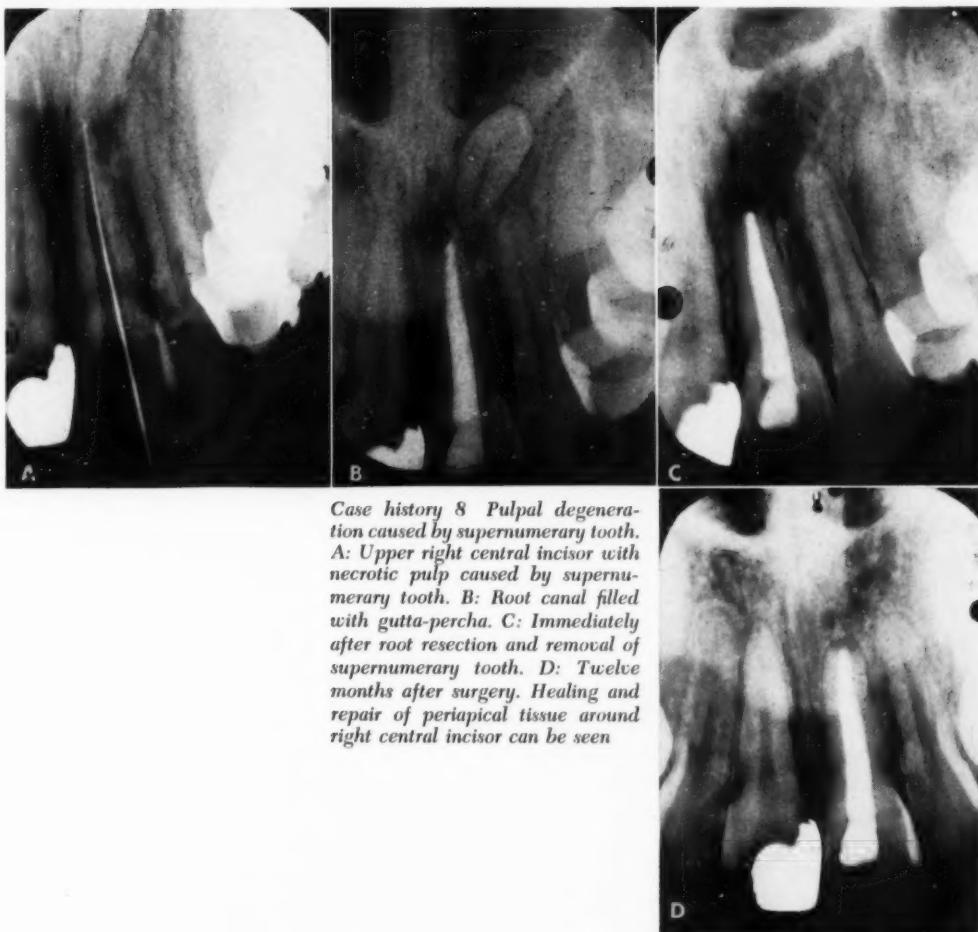
It has been the author's experience that many times the vitalometer is the only means by which an inflamed or necrotic pulp can be localized to a specific tooth. This is true particularly in instances in which the pain radiates along the entire course of the superior or inferior alveolar nerve. The effectiveness of this instrument, however, depends on the skill with which it is used. Not only does it require an individual calibration for each patient, but also the teeth to be tested must be dry. Ideally, a rubber dam should be applied to isolate the field. Rapid or immediate response on stimulation indicates an inflamed or

hyperemic pulp. If an excessive amount of stimulation is necessary, the logical conclusion is that the pulp tissue is in the process of advanced deterioration. Needless to say, if no response can be elicited from maximum stimulation, necrosis has occurred.

The use of a hot instrument or ice may be a substitute for the vitalometer in instances in which the tooth, or teeth, to be tested has extensive or complete coverage. When inflammatory changes, such as acute suppurative pulpitis, are taking place in the pulp tissue, a very painful response is evoked when heat is applied. This same finding would be true in instances of acute alveolar abscess. When testing with ice a normal vital pulp should be used as a control. A more rapid response to the application of cold indicates either hyperemia or serious pulpitis. Nonvital pulps usually will be unresponsive.

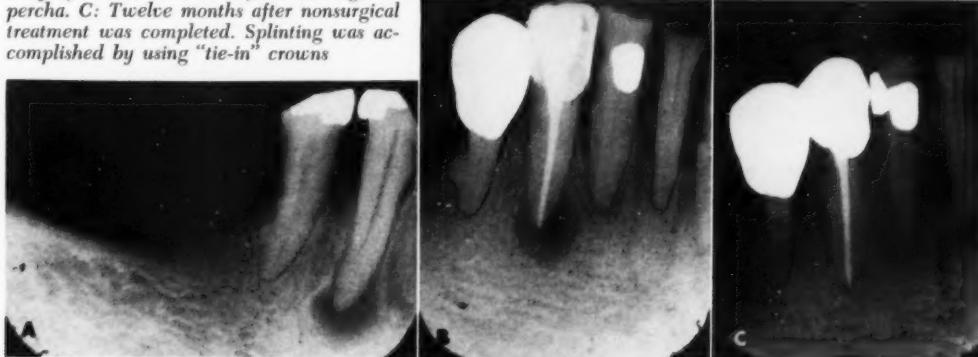
A diagnosis should not be made until roentgenograms have been taken and carefully examined. Recent roentgenograms may not show certain pathologic conditions which sometimes have a rapid onset. Different views of the same area are always of value in differentiating between normal structures such as palatal and mental foramen and areas of pathosis.

Only after the diagnosis has been made should consideration be given to a treatment program. In some instances endodontic therapy may not be the correct choice. A systemic or a local condition may contraindicate endodontic therapy. Grossman⁴ and others have set forth conditions that may preclude root canal therapy. If the tooth or teeth involved are to be retained, consideration must be given to the method of treatment—surgical or nonsurgical. It has been the author's ex-



Case history 8 Pulpal degeneration caused by supernumerary tooth.
A: Upper right central incisor with necrotic pulp caused by supernumerary tooth. B: Root canal filled with gutta-percha. C: Immediately after root resection and removal of supernumerary tooth. D: Twelve months after surgery. Healing and repair of periapical tissue around right central incisor can be seen

Case history 9 Splinting for periodontal disease accompanying pulpal involvement. A: Lower left cuspid with necrotic pulp and extensive periapical involvement. B: Immediately after root canal was filled with gutta-percha. C: Twelve months after nonsurgical treatment was completed. Splinting was accomplished by using "tie-in" crowns



perience that, if the following conditions can be met, a nonsurgical program will be successful: (1) instrumentation to the apical foramen, (2) elimination of the infection in the root canal, (3) elimination of exudates in the root canal from the periapical tissues and (4) the hermetic filling and sealing of the root canal and of the apical foramen.

Many dentists believe extensive apical pathosis is an indication for surgical intervention or even extraction. This is a false impression which has been given by the proponents who feel that surgical endodontics is the universal answer to pulpal involvements. When the focus (the diseased nerve tissue) for the pathogenic organisms is removed and the root canal rendered free of infection, healing and repair of the apical tissues will take place after the insertion of a well condensed root canal filling. Many authors⁶ have described instances of successful endodontic therapy when a nonsurgical procedure was used. However, when a cyst is the causative agent, surgical enucleation is necessary. It is interesting to note that in Sommer's⁶ investigation only 6 per cent of all periapical lesions were cystic. This finding was further substantiated by Wais⁷ who reported a slightly higher incidence. Other indications for surgical management are: (1) instances in which there is erosion of the apical cementum, the dentin, or both, (2) instances in which broken instruments or filling materials (in re-treatment) extend beyond the apical foramen, and (3) instances in which pulpal degeneration is accompanied by other conditions that require a surgical intervention.

Whenever mobility due to apical tissue destruction or periodontal disease is noted, it may be advantageous to incorporate splinting appliances

in the endodontic program. This procedure would also be employed after apical surgery with extensive tissue removal.

In instances where two or more teeth are involved and there is a history of necrotic pulps, all foci of infection must be treated simultaneously. If this principle is not adhered to, the untreated tooth may reinfect the tooth being treated.

Success in endodontic practice demands that the dentist have an acute awareness of the importance of the preparatory phase of diagnosis and treatment planning prior to initiating his treatment program. Failures can result even after a meticulous treatment has been completed if the practitioner has not conducted a thorough diagnostic investigation. Whereas most pulpal involvements will respond to nonsurgical treatment, others must be treated surgically. Concurrent treatment of all pulpal involvements must be included in any endodontic program. Consideration should be given to the supporting tissues. If there is periodontal disease or extensive periapical bone loss it is wise to splint the teeth.

* Associate professor and chairman, department of endodontics, Loyola University, School of Dentistry.

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**Study on causes of cracks
in resin material for denture plate**

Masatoshi Miyamoto. *J.Nihon Univ.School Den.* 2:163-168 March 1960

A series of experiments has been carried out to determine the causes of crazing of methyl methacrylate polymer dentures. Uniform sizes of material, measuring 30 by 20 by 1.5 mm., were used. A simple apparatus was devised by means of which vaporized methyl methacrylate could be applied to the test specimens.

In one experiment, specimens were exposed to such solvents as acetone, benzene and toluene, and the length of time noted until macroscopic crazing developed.

An experiment to determine whether a relationship existed between the curing cycle and crazing was undertaken, and no relationship was observed.

The role of water sorption on crazing was the subject of a third experiment.

Finally, the effect of heat treating was observed.

It was concluded that crazing is brought about by the combined influences of dissolution, sorption of water, and the existence of internal stresses.

Sweeney and others (1955) had concluded: "Sorption of excess water at elevated temperature causes the surface of the material to be supersaturated with water when the specimen is cooled. Evaporation of excess water sets up strains which eventually are released by the formation of craze marks."

Another possible explanation is that crazing is caused by differences in the degrees of polymerization; spots of low polymerization are selectively dissolved and thereby give rise to crazing.

The imbalance of internal stresses is further influenced by the water sorption.

The major cause for crazing in acrylic dentures is the type of mold used and the permeability of the separating mediums to water. A metal mold is ideal, but even use of a plaster mold can check the development of crazing if tin foil is used as a separation medium.

Crazing in an acrylic denture base can be rectified to a large extent by recurring it at 65°C. for one hour, after the denture has been embedded in a plaster mold, then at 100°C. for another hour.

Nihon University School of Dentistry, Tokyo, Japan

**Unfavorable effects
of inserted acrylic dentures
on the oral mucosa**

Hans Langer. *Deut.zahnärztl.Zschr.* 15:849-852 June 1, 1960

The qualitative detection and the quantitative measurement of residual monomers in a series of acrylic dentures were made at the Dental Institute of the University of Vienna, Austria. The investigation was designed to demonstrate chemically and physically whether well-fitting acrylic dentures affect the oral mucosa unfavorably.

The results of the serial investigation demonstrated that the presence of residual monomers (even in a seemingly small quantity) can exert unfavorable effects manifested by a denture-sore mouth or "stomatitis prothetica" (Nyquist's term).

Detection and elimination of all possible (usually mechanical) causative factors are essential. Frequently, the oral mucosa reacts to incompletely polymerized dentures with inflammatory responses (dark reddish areas), edemas and an extreme sensitivity to pressure, occasionally with gray-white discoloration. Generally, pain starts at specific points beneath the denture and becomes—especially during the night—almost intolerable.

Prior to any form of dental treatment or denture repair, patients showing unfavorable effects on the oral mucosa, probably due to acrylic dentures, should be referred to a physician for thorough examination. If the physician's findings as to other causes for the symptoms are negative, it will be necessary to repolymerize the denture, either superficially or completely, depending on the quan-

titative determination of residual monomers present.

However, in instances in which the dentist suspects that the patient's symptoms may be caused by a purely allergic reaction of the oral mucosa to the denture material used, re-exposure tests should be made immediately. If the test results are positive, the construction of a new denture is indicated. However, another denture material (either gold or platinum) should be used. These precious metals and their alloys do not produce allergic reactions.

Local and other causative factors should be considered carefully before any form of inflammation of the oral mucosa can be attributed to an unfavorable response to the inserted acrylic denture.

Frequently, patients exposed to cold or with endocrine disturbances (especially during menstruation and climacteric) exhibit symptoms which simulate those caused by unfavorable (allergic) reactions of oral tissues to denture materials or amalgam fillings.

Wiedner Hauptstrasse 18, Vienna 4, Austria

Cephalometric orientation in edentulous patients

Remo Modica and Adolfo Hertel. *Minerva stomat.* 9:447-452 July 1960

Prior to the construction of complete dentures, teleroentgenograms of 27 edentulous patients were taken to permit accurate cephalometric orientation. Particular consideration was given to the sagittal and vertical resorption indexes of the maxilla and to the angle between the palatine line and Camper's line (from the external auditory meatus to a point just below the nasal spine), which angle in most edentulous patients is extremely variable.

These cephalometric orientation points serve best as basic points in the cephalometric interpretation of teleroentgenograms for prosthodontic purposes. Verification of the cephalometric findings is obtained by taking an additional teleroentgenogram of each patient in a vertex-chin projection after application of radiopaque markers on the facial skin (to indicate the position of the condyles) and on the oral mucosa (to indicate the position of the incisive papilla and fovea).

Comparison of the determined distances between these cephalometric reference points with those found in the teleroentgenograms made it possible to establish accurately the intercondylar (osseous) distance and the index of deviation between maxilla and mandible in each patient.

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Studies on oral sensory thresholds:

I. The discrimination of small differences in thickness of steel wires in persons with natural and artificial dentitions

Yojiro Kawamura and Masami Watanabe. *M.J.Osaka Univ.* 10:291-301 March 1960

This study was undertaken to ascertain the ability of persons with natural and artificial dentitions to discriminate between small differences in the diameters of steel wires placed between the teeth and bitten.

The subjects were three young persons with normal, natural dentitions, and three patients with artificial dentition. The first of the three patients with artificial dentition had a complete upper denture and natural lower dentition; the second had complete upper and lower dentures, and the third had a post crown on the upper central incisor and natural lower dentition.

Ten trials were carried out on each subject in one test. The discriminatory threshold—the least perceptible difference between wires with the diameter R and those with the diameter R' —was determined. In a test each stainless steel wire was placed horizontally between the subject's central incisors or first molars and held by the examiner while the subject bit several times, gently but firmly. The interval in applying two test wires was less than five seconds. Forty-six test wires with diameters ranging from 0.5 to 5.0 mm., in increments of 0.1 mm., were used. The five wires with diameters from 1.0 to 5.0 mm. in increments of 1.0 mm. were termed "standard wires," and the other wires were termed "discriminating wires."

The three subjects with natural dentition could discriminate with 100 per cent success in wires held between the central incisors, when the diameter of the standard wire was 2.0 mm. or 3.0 mm.

and the diameter of the discriminating wire differed by 0.2 mm. or more. One hundred per cent success also was achieved when the diameter of the standard wire was 4.0 or 5.0 mm. and the diameter of the discriminating wire differed by 0.3 mm. or more. In tests with the wires held between the first molars, the difference in diameter between the standard wire and the discriminating wire had to be 0.2 mm. or more when the diameter of the standard wire was 2.0, 3.0, 4.0 and 5.0 mm.

In the patient with complete upper and lower dentures, the difference in diameter between the standard and the discriminating wires had to be 0.4 mm. or more for correct judgment when the diameter of the standard wire was 2.0 mm. For perfect discrimination, when the diameter of the standard wire was 3.0, 4.0 and 5.0 mm. it was necessary for the diameter of the discriminating wire to differ by 0.5 mm. or more. The same results were obtained with the patient with a complete upper denture and natural lower dentition.

There was not much difference between the ability of the incisors and that of the molars to discriminate between the sizes of wires. With the thicker wires, the molars were more discriminating than the incisors.

With artificial upper and lower dentition, the ability of the incisor to judge the diameter of wires decreased more noticeably than with natural dentition. For judging the diameter of wires

accurately, subjects with artificial dentition required that the difference in diameter between the standard wire and the discriminating wire be about twice as great as with subjects having natural dentition.

When the tooth in one jaw was natural and the antagonist was artificial, the sensibility of the teeth to judge the diameter of two wires was less than when both teeth were natural. Presumably, for accurate judgment of the diameters of wires, the teeth require normal periodontal membrane.

With comparatively thick wires, subjects who wore dentures could discriminate almost as accurately as could subjects who had natural dentitions.

The order of presenting the testing wires—whether the thicker or the thinner wire was presented first—strongly affected the accuracy of the judgment, but the meaning of this is obscure. Discriminatory function was not affected by the time of day at which the tests were made, or whether the tests were made before or after meals.

Hitherto, most studies on denture function have been limited to an analysis of the relations between the structure of the denture and jaw movement. More studies are required of the oral sensory function in denture wearers.

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Fractures

**Fractures of the middle third
of the facial skeleton**

V. Bergonzelli and A. Fontana. *Panminerva med.* 2:223-234 May 1960 [in English]

The recently observed significant increase in the incidence of facial trauma gave a new impetus to dentistry and medicine, especially to the specialties of oral and plastic surgery, to explore new methods designed to restore the external appearance of the face. Certainly, the internal portions of the facial skeleton, musculature and nerves, should not be overlooked. Only successful reparative interventions will enable the patient to regain his place in society.

The region involved in facial trauma is one of the most complex, and functionally one of the most important parts of the human body.

The often used term "fractures of the jaw," taken literally, would refer only to those fractures which involve the jawbone itself and to no other part of the maxillofacial region. However, such instances are rarely seen in practice and, therefore, the term "fractures of the middle third of the facial skeleton" should be preferred. This would include fractures of the jaw, nasal bone, palate, ethmoid bone, vomer and the zygomatic process of the temporal bone.

Because of its complicated anatomic structure, the middle third of the facial region will concern a variety of specialists interested in the different aspects of diagnosis and treatment: oral surgeon, orthodontist, prosthodontist, oral pathologist, neurosurgeon, ophthalmologist, orthopedist, otorhinolaryngologist, plastic surgeon and traumatologist, as well as general dental and medical practitioners. It seems unavoidable that their activities will overlap to a certain extent and that the specific clinical opinions and treatment designs will reflect specialized knowledge from different viewpoints.

It is, therefore, essential to coordinate the activities in order to select the most suitable treatment method. In Great Britain, France, Germany, the Scandinavian countries and the United States, coordinating teams of specialists have been formed at specialized centers to deal with facial trauma and its complications.

The large variety of the types of fractures of the middle third of the facial skeleton, however, made a precise diagnostic classification difficult. Many authors have offered specific classifying systems, among them Guerin (1866) and Le Fort (1901). Le Fort's classification is still widely used and differentiates fractures of the middle third of the facial skeleton as follows:

I. Extramaxillary fractures.**A. Central area.**

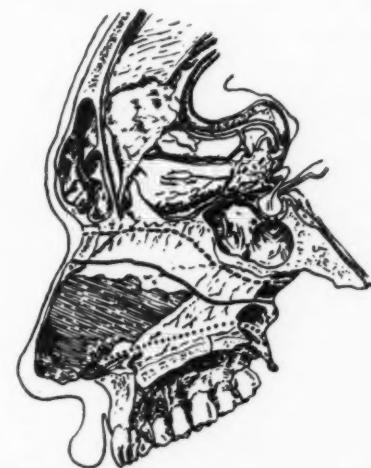
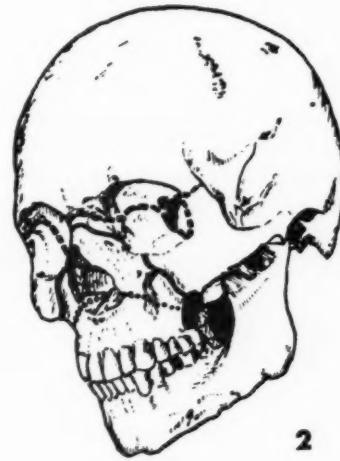
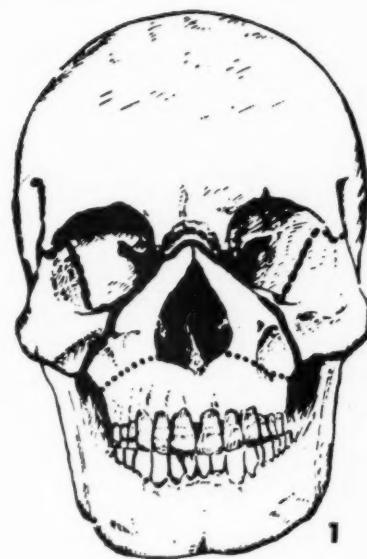
1. Fractures of the nasal bones and the nasal septum.
2. Fractures of the frontal process of the maxilla.
3. Fractures associated with both types, but extending to the ethmoid bone.

B. Lateral area.

1. Fractures of the malar bone and the zygomatic arch without limited mandibular movements but having minimum displacement and alterations of the lateral profile.
2. Fractures of the malar bone, either isolated or combined with fractures of the zygomatic arch but involving the lateral wall of the maxillary sinus and causing functional limitations of the temporomandibular joint and alterations of the lateral profile.
3. Fractures (similar to type 2) of the lower part of the eye socket causing diastasis of the zygomatic frontal suture.

II. True fractures of the jawbone.**A. Central area.**

1. Fractures of the alveolar process.
2. Fractures of the subzygomatic bones (Le Fort's type I or Guerin's fracture).



Figures 1-5 Principal lines of true fractures of the jaw: Low subzygomatic fractures (Guerin's and Le Fort's type I); — Pyramidal subzygomatic fractures (Le Fort's type II); - - - Upper zygomatic fractures (Le Fort's type III)

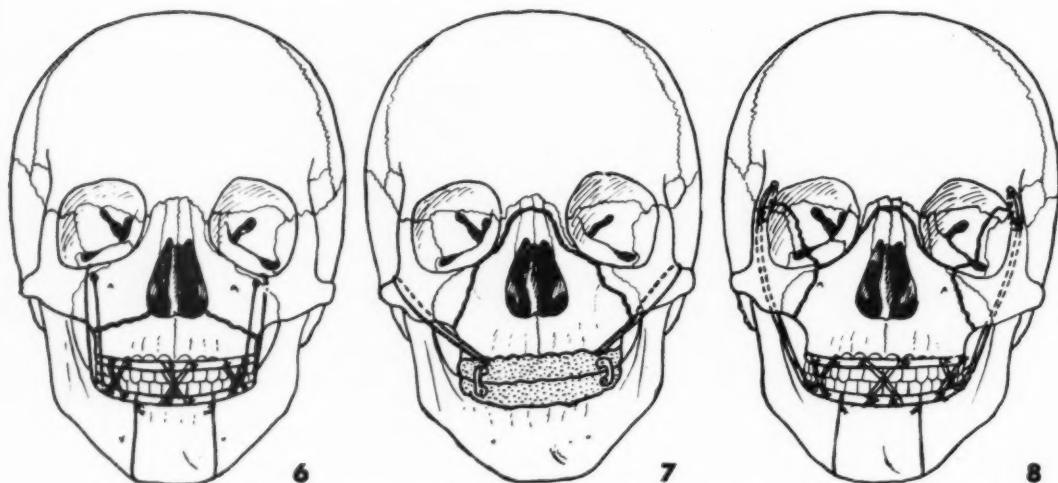


Figure 6 *Fragment immobilization (Le Fort's type I, Guerin's fracture)*. Figure 7 *Fragment immobilization (Le Fort's type II)*. Figure 8 *Fragment immobilization (Le Fort's type III)*

3. Fractures of the pyramidal subzygomatic bones (Le Fort's type II fracture).

These fractures may be unilateral or bilateral, and associated or not associated with fracture of the malar bone.

B. Central and lateral area combined.

1. Fractures of the upper region of the zygomatic process (Le Fort's type III fracture).
2. Fractures separating the two palatine processes.
3. Fractures involving the palate, socket and frontal bone.

III. Fractures involving fragmentation of the upper jaw. This type of fracture is beyond precise classification. It generally occurs in time of war. Fractures of this type rarely occur in civilians but isolated instances have been reported.

Treatment consists of the following procedures: (1) immediate arrest of shock, hemorrhage, pain and respiratory obstruction; (2) prevention of infection; (3) asepsis; (4) administration of anti-

biotics; (5) local anesthesia; (6) splinting to obtain immobilization; (7) functional oral surgical repair; (8) esthetic plastic repair; (9) use of elastic suspensions (in compound fractures), and (10) reduction of the fracture.

Neurosurgical intervention is indicated in instances in which the endocranial region is involved.

Direct wire fixation has certain advantages over other methods. The patient is able to use his eyes, mouth and facial skin adequately. Reduction of the involved bone and stabilization of the fragments can be carried out successfully, and the time of hospitalization is shortened.

Indirect fixation, however, is the method generally used at the Surgical Clinic of the University of Turin, Italy. This method has definite advantages in instances of Guerin's fracture in which immediate blocking of the mandible is indicated. It permits a satisfactory occlusion and it is better tolerated by the patient who can move the face and the mouth more easily.

Casa Polonia 14, Turin, Italy

Use of hydroxyzine hydrochloride in anesthesia for oral surgery

M. Carbone and B. Mazzarella. *Panminerva med.*
2:234-236 May 1960

The aims of preanesthesia can be summarized as follows: (1) decrease in salivation, and (2) decrease in psychic activity. A preanesthetic drug should induce in the patient a state of amnesia, sleepiness and unconsciousness.

Most preanesthetic drugs, however, have certain side effects which must be avoided in certain types of surgical interventions, especially in oral surgery. These side effects are: depression of the respiratory center, which must be as short as possible, and changes in deepness, rhythm and type of breathing which may produce serious complications during anesthesia and operation.

The search for a preanesthetic drug free from side effects still continues. Pharmacological and experimental research have made great efforts to provide new anesthetic agents for clinical use, free from noxious effects but suitable for oral surgical interventions.

Reserpine alone or combined with chlorpromazine has been recently introduced as a preanesthetic agent, to induce a condition in the patient which Delay called "neurolexia," and Foueks "peace of mind" or "ataraxy."

Hydroxyzine hydrochloride, a drug belonging to the antihistamine group, contains a tertiary ethylamine which is bound to a radical by two symmetric rings. The drug produces depression of the central nervous system and profound sedation. Its toxicity is low. Drowsiness may occur shortly after administration but the phase is transient and hardly ever proceeds into true sleep. Its analgesic effects are profound as are its antiemetic effects.

Hydroxyzine hydrochloride (Atarax hydrochloride) orally administered (from 25 to 50 mg.)

was used both as a preanesthetic sedative and as a regional anesthetic prior to operation in 60 patients between 5 and 82 years old undergoing oral surgical interventions at the Surgical Clinic of the University of Naples, Italy. The oldest patient, an 82 year old man, was operated on under local anesthesia for surgical correction of unilateral trigeminal neuralgia (Frazier's method).

Half of the patients were treated with hydroxyzine hydrochloride as a local anesthetic, and the others were treated with the same drug as a general anesthetic.

All the patients were perfectly conscious after the end of the surgical intervention. Sixteen patients exhibited dryness of the oral cavity; none, postoperative vomiting.

Hydroxyzine hydrochloride was used successfully in oral surgery either as a preanesthetic agent, a local anesthetic agent or as a general anesthetic agent.

[Accepted *Dental Remedies* 26:61, 1961, however, states: "The present use of ataractic drugs in dentistry for premedication is definitely empirical. Some of the phenothiazine derivatives may be useful for postsurgical medication and hospital dental practice. The status of these drugs is under continuing review by the Council on Dental Therapeutics."]

Surgical Clinic, University of Naples, Naples, Italy

The therapeutic use of local anesthesia

Edward J. Driscoll. *J. Oral Surg., Anesth. & Hosp. D.Serv.* 18:290-294 July 1960

Although the therapeutic use of local anesthesia may not seem at first consideration to be practical to the general practitioner, it is important for his broader knowledge of local anesthesia and for a better understanding of the pathologic conditions treated.

Local anesthetics can be used therapeutically as follows: (1) for conditions in which pain control is the distinguishing feature, such as in the treatment of neuralgias, muscle spasms, dislocations of the mandible, burns, arthritis, generalized inflammations, and pruritis; (2) for conditions in which pain control is not essential, such as extravascular leakage of intravenously injected

barbiturates, control of hemorrhage, and other conditions affected by other than anesthetic properties, and (3) for topical application.

Conditions for which dentists employ topical anesthetics include the following: (1) for painful oral ulcerations, such as occur in aphthous and herpetic stomatitis; (2) for pain associated with stomatitis of pemphigus, leukemia, erythema multiforme and periadenitis mucosa necrotica recurrens; (3) for pain due to osteoradionecrosis and oral carcinoma; (4) in the "learning-to-use" stage in complete denture prosthesis; (5) to drain superficial abscesses; (6) to facilitate the extraction of loose deciduous teeth; (7) to facilitate the scaling of sensitive teeth; (8) for preinjection desensitization of the mucous membranes, and (9) to control gagging during impression taking and for obtaining roentgenograms.

The drugs which have been used most widely in topical preparations are lidocaine, tetracaine, benzocaine and benzyl alcohol.

During the past two years, investigators at the Clinical Center of the National Institute of Dental Research have studied various antihistamine drugs, and have found that a solution of 0.5 per cent dyclonine and 0.5 per cent diphenhydramine hydrochloride in normal saline solution is a highly effective topical anesthetic with a very low toxicity.

National Institute of Dental Research, Bethesda, Md.

Anaesthesia in the dental chair: the role of trichlorethylene

J. McNaught Inglis and Victor Campkin.
Brit.D.J. 108:351-353 May 17, 1960

Despite the apparent safety of nitrous oxide and oxygen in anesthesia, dental operating conditions frequently are unsatisfactory, and distressing postoperative symptoms are common.

A described anesthetic technic has been employed in thousands of patients at the Birmingham Dental Hospital. It is easier to teach, easier to learn and is safer than nitrous oxide and oxygen with oxygen limitation. With the described technic, dental and medical students can, after

a small series of administrations, give a satisfactory nonhypoxic anesthetic to the vast majority of routine patients for dental extractions. Postoperative recovery is not delayed and the incidence of nausea or vomiting is not increased. Light surgical anesthesia is produced with nonhypoxic concentrations of nitrous oxide and oxygen, and analgesia is provided by trichlorethylene. Unconsciousness is produced by the nitrous oxide, analgesia by trichlorethylene, and muscular relaxation by verbal reassurance and encouragement of the patient.

When the patient is seated in the dental chair, he is encouraged to close his eyes, relax his voluntary muscles and breathe quietly through his nose while the nasal mask is held an inch or so away. Pure nitrous oxide is administered and the mask brought slowly down to the patient's nose until the sound of the expiratory valve hissing indicates an airtight fit and the absence of mouth breathing. Usually, about ten breaths of pure nitrous oxide will produce unconsciousness, and at this point slight cyanosis will appear. Oxygen now is administered until cyanosis disappears, and then trichlorethylene contained in a Rowbotham vaporizer is turned on, usually to between the $\frac{1}{4}$ and $\frac{1}{2}$ mark. Tolerance of the mouth pack (which now may be inserted), regular free respiration and the absence of cyanosis indicate that surgery may commence.

If a reflex response to the painful stimulation of dental extraction occurs, trichlorethylene may be re-introduced for a few breaths, after which the trichlorethylene can be turned off and the remainder of the extractions completed with nitrous oxide and oxygen alone. During anesthesia, the oxygen concentration is never less than 15 per cent (apart from induction) and usually is nearer 20 per cent.

This technic has been repeatedly and successfully used in children down to the age of three years. The technic allows the use of ample oxygen. The only contraindication to its use is in the completely uncooperative child; with such patients, resort must be made to ethyl chloride and the open mask technic.

Birmingham Dental Hospital, Birmingham, England

**Treatment
of temporomandibular joint dysfunction**

Nathan Allen Shore. *J.Pros.Den.* 10:366-373
March-April 1960

Dysfunction of the temporomandibular joint is due to abnormal dental occlusion in more than 90 per cent of the patients in whom this dysfunction is found. Although symptoms vary, the usual neuromuscular symptoms are: (1) temporomandibular joint clicking accompanied by crepitation; (2) irregular opening and closing of the mandible; (3) limited or excessive mandibular movement; (4) mandibular subluxation; (5) condylar hypermobility, and (6) a vicious and, frequently, exquisitely distressing cycle of muscle spasm—pain—muscle spasm.

The treatment of temporomandibular joint dysfunction calls for concomitant therapy of three major structures: the temporomandibular joint, the musculature and the teeth. In the past nine years, 558 patients have been treated successfully

for temporomandibular joint dysfunction, chiefly by eliminating the occlusal disharmony. Eighty per cent of the patients were women and 20 per cent were men. Temporomandibular joint arthrosis as a disease entity is not due to the aging process; 60 per cent of the patients were between 20 and 40 years old.

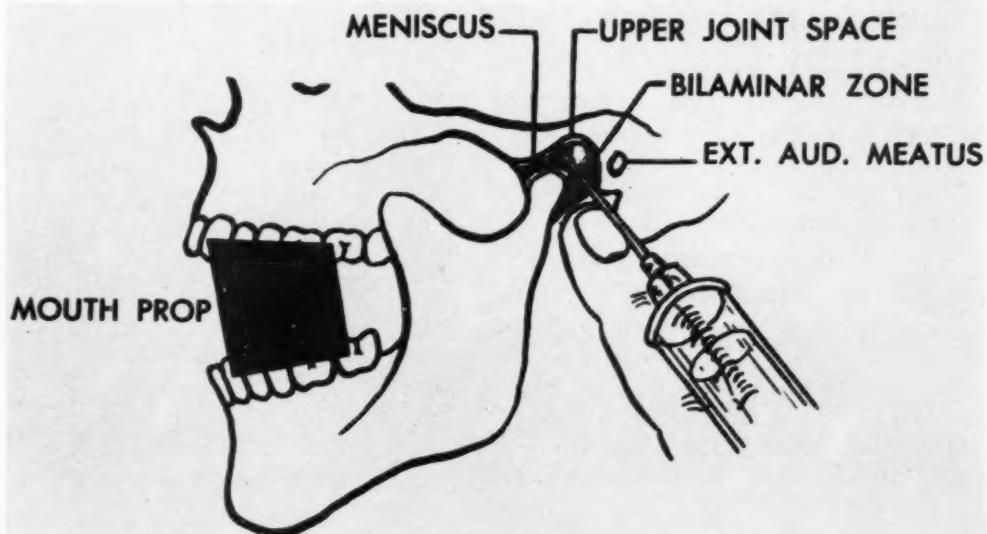
Before corrective dental procedures can be undertaken, the patient is given partial symptomatic relief.

Meprobamate therapy should be initiated at the first appointment, in a dosage of one 400 mg. tablet three times daily. If insomnia or nocturnal bruxism persists, a fourth tablet may be taken at bedtime.

To interrupt the cycle of muscle spasm and pain, 0.5 per cent procaine hydrochloride without a vasoconstrictor is infiltrated into the parts of muscle that are in spasm and into trigger zones.

Heat, vitamin therapy and analgesics are well known adjuvants in the treatment of temporomandibular joint dysfunction.

The two most effective agents for intra-articular injection are hyaluronidase and hydrocortisone acetate; these have been used in 347 patients. Hyaluronidase is indicated in the treatment of functional temporomandibular joint disease because the enzyme lyses viscous hyaluronic acid and promotes synovial fluid absorption. Thus, the fluid balance between the joint capsule and the adjacent tissue is restored. Because of the spread-



ing action of hyaluronidase, its use is contraindicated in the presence of bacterial infection. Injections of hydrocortisone acetate are most effective in treating noninfectious, inflammatory conditions of the temporomandibular joint; use of this drug is contraindicated by the existence of active infections, such as tuberculosis or the infectious arthritides.

The capsule of the temporomandibular joint lies about 5 mm. beneath the skin. Delivery of medication within the capsule is necessary for full therapeutic effect.

Accurate placement of the needle tip within the synovial cavity is facilitated by noting the movement of the condyle within the joint as the patient opens and closes his mouth. The forefinger is placed over the preauricular area and pressed inward. The patient opens his jaws widely and the finger pressure is maintained on the area for a minute or two. A depression will be evident when the finger is removed. The center of the depression is the site of the injection.

A sterile surgical technic is used, and 1.0 cc. of 2 per cent procaine hydrochloride is placed into the soft tissues surrounding the joint to ensure a painless injection. With the patient's jaw opened widely (see illustration), 150 to 300 turbidity reducing units of hyaluronidase and 0.5 to 1.0 cc. (10 to 25 mg.) of sterile hydrocortisone acetate suspension are injected with a 24-gauge needle into the capsule of the joint. The needle is inserted gently into the capsule (about 10 mm.) until resistance is met. Hyaluronidase and hydrocortisone acetate are thereby deposited into the upper synovial space of the joint. Injection into the lower space is unnecessary because of the spreading action of hyaluronidase. Further injections of the two drugs may be repeated weekly to control temporomandibular joint symptoms.

A case report illustrates the treatment technic.
654 Madison Avenue, New York 21, N. Y.

The tissue bank: present and future

G. W. Hyatt. *Mil. Med.* 125:523-531 Aug. 1960

The Tissue Bank Department of the Naval Medical School at the National Naval Medical Center, Bethesda, Md., is a clinical research and development unit emphasizing the study of human

homografts and their place in the field of tissue transplantation. The tissue bank division is responsible for the procurement, storage and dispensing of tissues and the technical development and research associated therewith. The tissue culture division is responsible for investigating methods of determining the viability of stored homografts, and for investigating the clinical potential of viable tissue culture cells. The tissue chemistry division is responsible for evaluating and improving the clinical standards of homografts. A tissue bank school trains students in the practical aspects of tissue banking.

The department has procured homografts from more than 300 sterile postmortem tissue excisions, has processed over 12,000 individual tissue deposits, and has used such deposits in the surgical treatment of over 3,000 patients. Bone has been used in 2,361 patients; skin in 223; fascia in 202; dura mater in 102; cartilage in 136, and artery material in 97.

A method of freeze drying—the removal of tissue ice crystals by sublimation in a vacuum—is used to process the various types of tissue. Freeze-dried tissues can be stored at room temperature, and the reconstituted graft has the same shape and volume as it had before freeze drying. In addition, the graft retains the biologically important mechanical properties.

Recently deceased donors provide the source of all homografts. The donor must have been free from all infectious diseases and malignancies to be eligible for aseptic tissue excision. The remains are maintained at a temperature of about 4°C. in the hospital morgue. The operative procedure is begun and the en bloc dissection is completed within 24 hours after death. The legal next of kin must express a desire to contribute the remains to the tissue bank.

Follow-up studies were made of 2,215 homografts, used in the following operations: 322 fresh fractures, 369 ununited fractures, 265 tumors and cysts, 206 arthrodeses, 164 dental and facial, 718 spine fusions, and 171 miscellaneous conditions. There were 593 successes, 81 failures and 1,541 instances in which the results were evaluated as being incomplete.

The future of the human homograft as a transplant which compares favorably with the autograft appears to lie in an interdisciplinary

approach spanning the interests of biology, chemistry, higher mathematics and physics. Apparently the current key to the problem lies in the activity of the biologist. Tissue transplantation must be pursued with infinite care and patience, superior instrumentation and intuitive but mature surgical judgment, lest the biologist's dream be artlessly exploited and become the surgeon's nightmare.

Tissue Bank Department, U.S. Naval Medical School, Bethesda, Md.

Surgical repair of facial clefts in Germany

D. Schlegel. *Zbl.Chir.* 84:489-497 July 1960

During the decade from 1947 to 1957, 201 infants and young children with cleft lip, cleft jaw or cleft palate were treated surgically at the Oral Surgical Clinic of the University of Kiel, Germany.

The review and tabulation of this series and a large number of statistical reports from many European countries indicate that the incidence of facial cleft has been increasing considerably in Europe. It appears that this trend will continue in the future because of the unfavorable effects on the recessive genes of the radioactive contamination of the atmosphere. For instance, the incidence of facial clefts observed at the Obstetrical Clinic of the University of Kiel was 25 (0.14 per cent) in 17,698 births during the decade from 1937 to 1947, whereas it was 204 (0.56 per cent) in 36,398 births during the period from 1947 to 1957. Facial clefts occurred twice as often in boys as in girls.

The classic pathogenetic concept that the face is developed in embryos by three independent processes (one frontal and two maxillary) and that facial clefts are caused by nonunion of these processes, has to be discarded. The present pathogenetic concept is less hypothetical; it states that facial clefts result from secondary fissures arising from hereditary causes in the embryonal face. These fissures originate during the first three months of embryonal life.

Intrauterine histotoxic anoxias, avitaminoses, virus infections and disturbances of the hormonal equilibrium also have been suggested as possible causative factors.

The timing and techniques of surgical repair of all types of facial clefts depend mainly on the age of the patient at which surgical interventions can be performed. The more severe the cleft, the earlier should the surgical repair be attempted. The earlier a severe cleft palate—especially a bilateral cleft—is repaired the more favorable will be the postoperative speech development. However, in many instances, an early surgical repair of a facial cleft will require a longer postoperative orthodontic treatment.

Cleft lip should be repaired as soon as possible, that is when the child is from one to three months old. Several reasons militate against a cleft lip repair at a later date, that is, between the second and the third year, the main reason being that clinical evidence proves that a cleft repaired at a later stage tends to increase in width and is, therefore, more difficult to bridge. Delayed surgical repair of all types of facial clefts increases the danger of infection of the middle ear.

Surgical repair of cleft palate should be performed after the deciduous teeth have erupted, that is, at an age between four and five years. If for psychologic, esthetic and other reasons an earlier closing of cleft palate is preferred, the intervention should be performed in two stages: (1) repair of the cleft of the soft palate at an age between four and six months, and (2) repair of the cleft of the hard palate after eruption of the permanent dentition. This surgical procedure will not interfere with normal growth of the jaw, will protect the child from postoperative infections (especially of the ear), and will produce better speech development.

Successful surgical repair of facial clefts, however, requires close coordination between the oral surgeon, orthodontist and speech therapist to insure optimal results.

Weimarerstrasse 8, Kiel-Wik, Germany

Value of an early decompression of the paralyzed facial nerve

David Wassermann. *A.M.A.Arch.Otolaryngol.* 72:333-339 Sept. 1960

The increased pace of modern living in most civilized countries has increased significantly the incidence of bodily injuries. The facial nerve (seventh

cranial nerve) ranks second in injuries of the cranial nerves because this nerve has a longer course within its bony canal than any other nerve in the human body. When trauma to this nerve occurs in the bony canal, the nerve cannot undergo reparative processes by swelling. Circulation is arrested, resulting in ischemia and degeneration.

A ten year old girl had sustained a simple fracture of the mastoid process of the temporal bone (on the right side) through the fallopian aqueduct (facial canal).

Within five days, peripheral paralysis developed on the right side of her face.

Eight days later, a comparatively simple excision of the traumatized process of the temporal bone (mastoidectomy) and a decompression of the facial nerve at the right side of the vertical portion of the fallopian aqueduct were performed.

Uneventful and complete recovery occurred two weeks after the operation. The early liberation and decompression of the facial nerve as well as the return of normal circulation had promoted rapid healing and thereby produced the favorable result. During follow-up examinations, no distortion of the face has been observed.

285 West End Avenue, New York 23, N.Y.

Report on a foundation trip in Europe in 1959: statistics on cleft lip and cleft palate surgery

Peter Randall. *Plast. & Reconstr. Surg.*
26:69-72 July 1960

During a six-week visit to Europe in the spring of 1959, the author observed more than 20 outstanding European clinics in England, Scotland, Sweden, Denmark, Germany and France. Information on the treatment of cleft lip and cleft palate was obtained from 18 clinics.

In the treatment of cleft lip, most of the surgeons interrogated prefer the Le Mesurier operation, although technics varied greatly from clinic to clinic. Some surgeons followed Professor Kilner's conservative method of doing a simple closure initially without the use of any flaps, and then of performing a secondary operation at a later date. Most surgeons operate first on the lip

when the patient is between two and three months old.

Contrary to the diversity of lip operations, the technic for cleft palate repair is basically the same in almost every clinic. Some method of lengthening the anteroposterior dimension at the time of the primary closure is almost always used. In clefts involving the alveolar ridge and anterior hard palate, a vomer flap type of closure usually is completed at the time of the lip closure or at a separate operation preceding the closure of the rest of the palate. A two flap Wardill type of closure usually is done later.

Palate closure is planned to be completed before the patient is 18 months old by two thirds of the clinics, and prior to 24 months of age by three clinics. In the German clinics, however, the operation is not done until the patient is 24 months old, at which age the soft palate is closed, with the hard palate closure coming at the age of 4 to 4½ years. In Germany, after the soft palate is closed the repair is protected by an acrylic plate. Three weeks after the operation, the superior part of the acrylic plate is built up with gutta-percha, to stretch the soft tissues of the palate. More gutta-percha is added from time to time over the next three weeks, after which the patient routinely is sent to a speech school for six weeks. Ninety per cent of the patients are said to achieve normal speech after cleft palate repair.

The German and Swedish clinics are beginning to use bone chips or bone blocks to bridge gaps in the alveolar cleft. Bone chips or blocks are inserted shortly after lip closure.

Most of the clinics visited have well-integrated cleft palate programs and good speech therapists. The decision as to which patients need a secondary cleft palate operation usually is initiated by the speech therapy department and then passed on to the plastic surgeon who reaches his conclusions on a simple physical examination to ascertain evidence of nasal escape and hypernasality. In four clinics, additional tests include roentgenographic studies of the soft palate, specific pressure studies and sound spectrographic analyses.

There was little agreement as to the operation of choice for the secondary intervention.

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**Progress in endodontics:
the 'Exit' extirpation needle**

Morton Charlestein. *D.Dienst* 12:11 June 1960

Only by complete extirpation of an inflamed pulp from its chamber and the root canals is it possible to obtain a reliable and lasting endodontic result. Pulpectomy, however, is a tiresome and time-consuming procedure for both the dentist and the patient and is particularly difficult to perform in multirooted teeth. Frequently, the method of choice will be pulpotomy, the surgical removal of the coronal part of a still vital pulp.

Progress in the development of specific endodontic instruments, especially of the "Exit" extirpation needle designed by D. Sturm, a German endodontist, made it possible to perform pulpectomy or pulpotomy without difficulties.

After successful anesthesia and cauterization, the inflamed pulp can be extirpated with an "Exit" needle from the pulp chamber to the apex in a few seconds. Even in root canals with so fine an apical portion that only a very smooth and sharp Miller needle can obtain access, the "Exit" needle will remove the pulp without enlarging the root canals.

The operative procedure is comparatively simple. The "Exit" needle is placed in a contra-angle handpiece (a reducing contra-angle handpiece is particularly suited for pulpectomy) and carried to the apex rotating gently. The customary handpiece is rotated for one second at medium speed, whereas the reducing handpiece can be applied at full speed.

By rapid rotation of the excision needle, the cutting tips will sever the pulp exactly at the apex. The wavelike inclinations of the needle facilitate the removal of the pulp portion from the walls of the root canal. The pulp wraps itself around the rotating needle. Even if the pulp is partly necrotic, it can be completely removed in about one second.



Pulpectomy by using the "Exit" needle in three anatomically different root canals

After pulpectomy, the routinely disinfected root canal can be prepared for filling at the same sitting.

The "Exit" extirpation needle has the following advantages:

1. Pulpotomy can be performed without the danger of postoperative inflammation of the remaining pulp portion.
2. Pulpectomy can be performed without difficulty, even the pulp portion in the narrowest root canals can be removed without enlarging the canals.
3. Necrotic, putrescent or devitalized pulps and residues can be eliminated quickly.
4. During pulpectomy or pulpotomy, the entire operative field remains visible.

The "Exit" extirpation needle, already approved by many German endodontists and general dental practitioners, is a valuable endodontic instrument.

Oberföhringerstrasse 6, Munich 27, Germany

**Investigation of the properties
(hermetic sealing capacity)
of several root canal filling materials**

Heinz Tschamer. *Stoma* 13:172-192 Aug. 1960

One of the most important aims of endodontic treatment consists in the hermetic sealing of the root canals against the reactivated mesenchyma, thereby rendering the periapical tissues histologically healthy even in instances in which the tooth had to be devitalized.

An adequate root canal filling material, therefore, must possess the following properties: (1) easy applicability; (2) minimum irritability toward the soft tissues; (3) maximum volume constancy; (4) maximum adhesiveness; (5) mini-

mum porosity; (6) minimum solubility; (7) maximum resistance to the effects of liquids; (8) maximum density to roentgen rays; (9) maximum and lasting sterility; (10) complete disinfectant capability; (11) medium solidification time, and (12) easy removability.

These required properties, especially the hermetic sealing capacity, of the following root canal filling materials were investigated at the Dental Clinic of the University of Graz, Austria: (1) "Renium" (Cardex); (2) "AH 26" (De Tray); (3) "N 2" (Sargent); (4) "R Mass" (Riebler), and (5) "D Mass" (Drewenyi).

The claims of the manufacturers in regard to maximum volume constancy, maximum adhesiveness and minimum solubility were best met by "Renium" and "AH 26," and only partly by the other root canal filling materials. However, neither "Renium" nor "AH 26" exhibited sufficient sterility and disinfectant capability, which properties were observed in a comparatively high degree in "N 2," "R Mass" and "D Mass."

Although this experimental investigation revealed a superiority of "Renium" and "AH 26" in regard to a more reliable hermetic sealing of the root canals, the final evaluation in regard to the other properties required can be obtained only after clinical and histological examinations which will be carried out in the near future. The results of these studies will be reported.

Zahnklinik und Kieferstation, Landeskrankenhaus, Graz, Austria

Direct pulp capping

Irena Kozlowska. *Czas.stomat.* 13:375-388
June 1960

During the period from October 1956 to December 1959, 62 patients who had sustained exposures of vital pulps in traffic accidents, were treated by direct pulp capping at the Dental Clinic of the University of Warsaw, Poland.

In this procedure, mainly utilized to save the involved vital teeth, a new calcium hydroxide preparation, produced in Poland, was used. To arrest hemorrhages, the preparation was saturated with epinephrine (1:1,000 concentration). The pH was 12.1.

Prior to clinical use, the bactericidal action of

the calcium hydroxide-epinephrine preparation (in 1:40 concentration) was investigated. Various bacterial strains, mainly *Staphylococcus pyogenes* var. *aureus*, *Streptomyces viridans* and *Streptococcus beta hemolyticus* appeared to be completely destroyed.

Direct pulp capping with calcium hydroxide was performed only when the involved teeth still had a vital pulp, when only minor hemorrhages had occurred in the root canals, when the roentgenograms showed no other pathologic changes than the pulp exposure, when the teeth were free from caries or when the cavity preparation appeared to be satisfactory, and when the entire operative region was sterile.

The method used was comparatively simple. Sufficient amounts of calcium hydroxide were squeezed from the tube to cover the entire exposed region. A warm stream of air was slowly directed on the capping, and the preparation was gently placed in position with dry cotton pellets. Only slight pressure was exerted during the entire procedure to prevent forcing part of the material into the pulp chamber. A zinc oxide-eugenol layer then was placed over the calcium hydroxide cover.

From three to six months after direct pulp capping, the fillings were removed, and the site of pulp exposure re-examined with probes and needles. The reactions of the pulp to various thermic stimuli and faradic currents were determined and recorded. New roentgenograms were taken.

Uneventful healing took place in 71.9 per cent of patients, and the vitality of the pulp seemed to be preserved in 89.6 per cent.

Follow-up examinations were made during a period from four to seven months after placing the final restoration to demonstrate whether the sealing of the pulp capping had been sufficiently tight to prevent contamination. There were no complaints of discomfort or pain, and obviously no observable side effects.

Although the use of the calcium hydroxide preparation as material for direct pulp capping saved the great majority of treated teeth, the clinical operators were advised to warn the patient that pulp capping will not be successful in all instances, whatever capping and filling material is used.

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**Topical use of corticosteroids
for the relief of pain sensitivity
of dentine and pulp**

Arthur E. Fry, Robert F. Watkins
and Nilkanth M. Phatak. *Oral Surg., Oral Med. & Oral Path.* 13:594-597 May 1960

Forty-three teeth with either pulpal exposure or carious invasion were studied and treated with a medication consisting of a small drop of camphorated parachlorophenol with metacresol acetate to which was added enough prednisolone acetate powder to form a thin paste.

Teeth in which pulpal hyperemia had occurred as a result of restorative interference were treated as follows:

1. When a full crown preparation was involved, the prepared medication was initially applied to the exposed dentin, after which a temporary crown was cemented with zinc oxide-eugenol. In restorative procedures involving inlay or gold foil restorations, the restorative material was removed, medication was applied and the cavity was sealed with zinc oxide-eugenol and zinc oxyphosphate cement.

2. When a vital operative pulpal exposure had occurred under aseptic conditions, the paste was picked up on a small pellet of cotton and placed

directly over the exposure to protect the pulp. A thin mix of zinc oxide-eugenol was placed over this without applying pressure. Occasionally, an autoclaved asbestos disk or cigarette paper was placed over the medication, after which the zinc oxide-eugenol was placed and the cavity was sealed with zinc oxyphosphate cement.

3. When patients reported dental pain and roentgenograms indicated the possibility of pulpal exposure if carious dentin were removed completely, the carious dentin was only partially removed, and the paste was placed over the un-excavated carious dentin. The paste was covered with zinc oxide-eugenol and the seal was completed with oxyphosphate cement.

All patients said that their pain hypersensitivity had subsided promptly. When queried 24 hours postoperatively, most patients said pain was absent. The elapsed time between the initial treatment and further rechecks varied from four to six weeks. On recall examination, all treated teeth responded normally to vitality tests. All patients were free of symptoms and roentgenograms showed evidence of calcification or the formation of secondary dentin. To date, only 1 of the 43 treated teeth has had to be extracted.

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Operative dentistry

The effect of the ultra-high-speed air turbine drill on the conduct of a general dental practice

A. D. Robinson. *Brit.D.J.* 109:22-24 July 9, 1960

It is advisable for the dentist, obtaining an ultra-high-speed air turbine handpiece for the first time, to prepare cavities on extracted teeth held in the hand. A little practice is required to find the delicacy of grip and touch necessary to keep the turbine rotating at high speed and so cutting efficiently.

The bur will be found to cut enamel with unusual ease and in a manner different from that of the ordinary electric dental engine. The air turbine handpiece has no directional pull or tendency to run off at corners.

The first cavities cut will almost certainly be too deep and too wide. The combination of tremendous cutting speed, enthusiasm and little skill will produce grossly over-extended cavities.

The best tooth to choose for the first trial in the mouth is the lower first molar. A few occlusal cavities should be prepared before attempting the more complicated Class II cavities.

In cutting teeth, plenty of water should be used. Dry cutting results immediately in tremendous heating of the bur and tooth. The considerable amount of water probably will embarrass the operator. Removal of the water from the mouth is a problem, since the average saliva ejector is not designed for such volume. A large bib is a necessity, and a double thickness of towel around the neck of the patient just under the chin is a useful safety measure. The need for this protection is greatest when preparing cavities in upper teeth, especially upper anterior teeth.

Another consequence of the use of water as a coolant is the obscuring of the dental mirror. It

will help if the mirror is dipped occasionally into a weak solution of a detergent.

Only burs of small size are required. A suggested assortment with which to start includes the following: no. 1 round, no. 1 flat fissure (cross-cut), no. 701 P tapered fissure (plain cut) and no. 2 inverted cone (plain cut). In addition, a few small diamond burs—perhaps a cylinder, a round and an inverted cone bur—are helpful.

The dentist is faced with a new problem of self-protection. With the turbine handpiece, a mist of water with suspended dentin and enamel dust, amalgam, saliva and bacteria constantly are being hurled at the operator. Large pieces of enamel or amalgam may be projected from the patient's mouth. Protective glasses should be worn to shield the dentist's eyes, or it may prove desirable to wear a protective mask.

The air turbine drill is of greatest value when used in areas of good visibility, where it is necessary to remove noncarious enamel and dentin in significant quantities.

Because of the very efficient cutting with small burs, it is possible to prepare with relative ease cavities of more delicate proportions than were commonly made with steel or carbide burs and an electric drill.

A curious feature of cavity preparation with the ultra-high-speed handpiece is the roughness of the cut tooth surfaces. Chisels are needed to finish cavity margins. The ultra-high-speed handpiece is invaluable for making the lingual shoulder in the preparation of teeth for jacket crowns.

The air turbine handpiece requires a substantial initial financial outlay, and higher replacement and running costs, for there are many indications that the turbine handpieces will not survive as many running hours as a conventional handpiece. In return for these added expenses, the dentist may expect a considerable easing of certain tasks, an improvement in the patient's comfort, and some increase in the number of cavities which can be prepared in a given time. The turbine handpiece does not increase the speed with which fillings can be inserted, and the dentist should refrain from preparing more cavities than there will be time to fill.

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**The antisialogogue effect
of phenothiazine derivatives:
comparison of promazine, levomepromazine,
trifluoperazine, prochlorperazine,
methdilazine and prothipendyl**

Allen B. Dobkin and Dale Palko. *Anesthesiology* 21:260-262 May-June 1960

The antisialogogue effect of six phenothiazine derivatives in six healthy adults was determined and the results compared with previous observations of the antisialogogue effect of the belladonna drugs and of some anticholinergic drugs. The test drugs were promazine, levomepromazine, trifluoperazine, prochlorperazine, methdilazine and prothipendyl.

Duplicate tests were done at least 24 hours apart. Each subject had at least 14 tests. In the control test, saliva was collected for 10 minutes before any drug was administered and then for 30 minutes after the intravenous injection of a mixture containing carbaminoylecholine chloride and epinephrine. In the comparative tests, each drug was injected intravenously at the beginning of the experiment, and saliva was collected for 10 minutes. Then the control mixture was injected and saliva was collected for a further 30 minutes.

None of the test drugs suppressed salivation during the initial 10 minute period. Promazine had a very weak, unreliable antisialogogue effect, whereas the other five drugs reduced the secretion of saliva by about 50 per cent.

The data from these experiments indicate that when these drugs are used for preanesthetic medication, it is advisable to combine them with a therapeutic dose of either scopolamine, atropine or belladonna alkaloids (maleate salts), to assure adequate reduction of salivary secretions.

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**The time interval: a key factor
in drug administration**

Karl Bucher. *CIBA Symp.* 8:7-12 April-June 1960

The time interval at which a specific drug is administered is one of the four factors which regulate the potency and duration of the effect produced by the agent selected. The four factors—dosage, route, type and time interval—may overlap or partially replace each other. This is a possibility the dentist or physician must bear in mind before deciding the right moment for administering the drug selected at the office.

The disease, its manifestations and, in certain instances, its etiology, determine the kind of therapeutic effect required. The severity of manifestations indicates the degree of potency of the therapeutic effect to be produced. The clinical course of the disease determines the duration of the effect, that is the length of time during which the effect can be considered as desirable.

After having studied the manifestations and localization of the disease and, if necessary, the causative factors (first phase), the practitioner must decide on the type of drug to be used (second phase). At the same time, he must determine the therapeutic effect he wishes to produce. By various means, the practitioner can regulate and control the degree of potency and duration of the effect (third phase). This includes the rapidity with which the drug is inactivated and eliminated, and the rapidity with which the drug permeates the involved region and is expelled after the desired effect has been obtained. Although the dentist or physician generally will be unable to influence these factors, he can to some extent control the concentration by selecting the proper dosage, the route, type and time interval (dosage schedule) of the drug administered.

In the absence of any known method to determine accurately the concentration of the drug in substrate regions, the measure generally adopted is the determination of the corresponding concentration in the blood plasma.

If antibiotic therapy is used at the office, it is important to maintain a blood plasma concentration which remains at a specific level. The possible means of maintaining a steady level are retarded absorption and more frequent administration of

individual doses. The penicillins (benzathine, benzyl, potassium, procaine or sodium) are usually well tolerated and can be prescribed in comparatively large doses but a slow absorption must be maintained. This method may produce periodic concentrations in the blood plasma in excess of the initially desired level but it will not cause serious side effects.

If other antibiotic agents are selected that are less well-tolerated than penicillin (combinations of tetracyclines, streptomycin or sulfonamides), the dentist or physician should attempt to control the therapeutic effect by using the time interval (frequency of drug administration) advantageously. The extreme example for favorably used time interval is the continuous intravenous drip infusion, a technic which is used more and more in all instances which require individualized dosages.

The time interval between doses administered can be determined by evaluating the duration of the therapeutic effect of the drug selected which essentially depends on the rapidity with which the drug is inactivated and excreted.

Other factors also play a part in the duration of the therapeutic effect such as specific properties of the drug inducing tissue affinity or provoking the development of potent compensatory mechanisms within the organism. Such drugs, however, should not be considered for routine use in medical or dental practice.

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Phenytoin gingival hyperplasia and chronic gingival irritation

J. M. Collins and B. A. Fry. *Austral.D.J.*
5:165-168 June 1960

Diphenylhydantoin sodium currently is the drug of choice in the treatment of epilepsies. Many reports have been published about the ability of this drug to induce gingival hyperplasia, but there is wide discrepancy in the incidence of this complication as reported by various authors. Almost all reports rely on qualitative descriptions of the lesions and no attempt is made to utilize controls to assess the incidence of chronic, non-specific gingival hyperplasia in the population under study.

A survey of the incidence of gingival hyperplasia was made at the Mental Hospital in Sunbury, Victoria, Australia. The grading of the extent of gingival hyperplasia was as follows:

Grade I: An increase in the thickness of the interdental papillae and a rolled effect at the gingival margins.

Grade II: Encroachment of the gingival tissues on the crown of the tooth.

Grade III: Sufficient overgrowth of gingival tissue to interfere with function.

Of 50 patients who had been receiving diphenylhydantoin sodium for more than three months, 18 had normal gingivae, 15 had Grade I gingival hyperplasia, 14 had Grade II hyperplasia and 3 had Grade III hyperplasia.

Eleven of the 50 patients had good oral hygiene, 17 had fair oral hygiene and 22 had poor oral hygiene. Thirteen of the 50 patients were either idiots or imbeciles, 22 were feeble-minded and 15 were of normal intelligence. Thirty-five of the 50 patients breathed through the nose and 15 breathed through the mouth.

No patient with a rating of fair or good oral hygiene developed Grade III gingival hyperplasia. Those with poor oral hygiene had a greater incidence of severe hyperplasia than the other groups.

Those patients of normal intelligence had gingival hyperplasia less often and less severely than the other groups. The only patients to have Grade III hyperplasia were those in the idiot-imbecile category. However, there is a fairly close relationship between the intellectual level of the patient and the state of his oral hygiene, as evidenced by the fact that 11 of the 13 patients in the idiot-imbecile category had poor oral hygiene.

Of the 35 nose breathers, 17 had normal gingivae, whereas only 1 of the 15 mouth breathers was free from some degree of gingival hyperplasia.

Fifty other patients not receiving diphenylhydantoin sodium served as a control group. Of the 50 control patients, 37 had normal gingivae and 13 had Grade I hyperplasia. Thus, the incidence of Grade I gingival hyperplasia was similar in the experimental and control groups.

Of the variables examined, the state of oral hygiene and the intellectual level (both closely related), and mouth breathing, appear to be signifi-

cant. The importance of oral hygiene cannot be overemphasized. Patients, especially those who are mentally deficient, should be under dental supervision to maintain optimal oral hygiene.

It is reasonable to postulate that all patients receiving diphenylhydantoin sodium are susceptible to gingival hyperplasia. If their oral hygiene is poor and, especially if they breathe through the mouth, this susceptibility is accentuated.

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Streptokinase in the treatment of postoperative complications arising after surgical repair of jaw fractures

H. Rosolleck. *München.med.Wschr.*
102:1293-1295 June 24, 1960

The oral administration of the enzyme compound "Varidase," containing streptokinase and streptodornase, is by no means a substitute for proper oral surgical interventions in patients with multiple, compound or comminuted fractures of the jaws. The enzymatic agent, however, in conjunction with antibiotic therapy prevents and limits postoperative complications such as infection, inflammation, edema or hematoma.

Positive results, sometimes within 24 hours, were obtained in 93 patients with complicated jaw fractures treated at the Bethel Hospital in Bückeburg, Germany. The average dose of Varidase (in tablet form) administered was 10,000 units every six hours for one week. In none of the patients were the postoperative complications aggravated whereas the healing process appeared to be hastened. There was no rise in temperature attributable to the enzyme, and no pain or tenderness in the oral cavity. No unfavorable side effects such as sore throat, chills, cyanosis or allergic reactions were noted.

The mechanism initiated by the enzyme compound by which the postoperative complications are reversed, however, seems to permit the passage of microorganisms from the site of infection (the fractured jaw) to other parts of the body. Therefore, it is mandatory that all patients treated with this enzyme compound receive concurrent antibiotic therapy.

In instances in which abscesses have developed in or near the involved part of the maxillofacial

region, beneficial results have been obtained by local application of streptokinase-streptodornase to the wound.

Dentists, and especially oral surgeons, will find many occasions for the oral or topical administration of the enzyme compound to prevent postoperative inflammation, infection or other complications.

The drug should not be given to patients with a history of deficient coagulation or of systemic disease because of the possibility of inducing hemorrhages.

The drug, intramuscularly or intravenously injected, may produce untoward side effects.

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A clinical trial of a tranquilising drug (Pacatal) in dentistry

J. H. Sinclair. *New Zealand D.J.*
56:130-133 July 1960

In a clinical trial of mepazine hydrochloride (Pacatal), patients were selected at random from those attending the oral surgery and conservative departments of the University of Otago Dental School. The effect of mepazine (100 mg.) was compared with that of a placebo in a double-blind trial. A subsidiary trial was set up, in which the effect of mepazine was compared with that of secobarbital sodium (1.5 grains).

The subjects in the first trial were 132 patients. Either mepazine or the placebo was given about one hour before the dental operation commenced. The results showed no significant difference between the tranquilizing drug and the placebo. Slightly over 30 per cent of both the experimental and control patients claimed to feel beneficial effects from mepazine and the placebo. About 75 per cent of the patients in both groups said they were relaxed. This indicates that the majority of dental patients are reasonably relaxed, or think they are, without the aid of a drug. About 47 per cent of the patients in both the trial and control groups said they would prefer not to have a pill before treatment. Patients were interviewed one day postoperatively. No difference in side effects could be detected between mepazine and the placebo.

In the subsidiary trial, in which the effects of

mepazine and secobarbital sodium were compared, no difference could be detected between the two drugs. Almost 40 per cent of the patients who received secobarbital sodium said they felt no effects after one hour. No toxic effects were observed either with secobarbital or mepazine.

Several patients were premedicated with a combination of mepazine and secobarbital sodium, or mepazine and codeine. The response was encouraging and warrants further investigation.

Doses of mepazine in excess of those noted were taken by the author and several colleagues. Apart from a slight lack of ability to concentrate, no side effects were noted, even when the dose was in excess of 200 mg.

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Bell's palsy—a medical emergency

David D. Cohen. *J.A.M.A.* 173:1563-1565
Aug. 6, 1960

Until recently, thoughts concerning therapy for Bell's palsy ranged from complete nihilism to the conviction that the use of one of the neurotropic vitamins was a specific cure. An eventful revolution now has occurred in the management of this disease, resulting in a shortened course and an improved prognosis. The new therapy employs stellate ganglion block, parenteral nicotinic acid, and administration of corticosteroids at the earliest possible moment; if this does not bring quick improvement, anticoagulant and fibrinolytic agents may be used. In the few instances where these measures fail, surgical decompression of the facial nerve should be recommended.

Bell's palsy is a spontaneously occurring condition of unknown cause in which the function of the seventh cranial nerve is interrupted. Loss of function of the facial nerve and the muscles it innervates produces a profoundly depressing effect on the psyche. The paralyzed side hangs always in the same blank stare; the eyelid will not close; the corner of the mouth sags; the lips are drawn to the unaffected side; the patient is unable to whistle, smile, close his eye or wrinkle his forehead.

The disease develops suddenly when the person is feeling perfectly well. Paralysis often is pre-

ceded by aching pain about the homolateral mastoid process for one, two or more days before the palsy occurs and, commonly, for 48 hours after the paralysis has developed. The attack rate is unrelated to sex, season or geography. The adult age group is most commonly afflicted.

Most authorities now agree that Bell's palsy is an ischemic neuritis resulting from segmental arteriolar spasm, a "vascular dysregulation," which produces secondary edema; that the vasa nervorum in this location are, in effect, end arteries. In addition to spasm, there may be an element of thrombosis. The degree and duration of ischemia determine the course and prognosis. With lesser degrees of ischemia, the course may be less than one week; every patient with this mild type recovers spontaneously and completely. Severe degrees of ischemia lead to complete paralysis; nevertheless, 80 per cent of these patients recover fully with no sequelae, in four to six weeks. The remaining 20 per cent of the patients make variable incomplete recoveries in three to nine months, with some sequelae in every patient.

After the diagnosis has been established, immediate stellate ganglion block should be obtained with 10 ml. of 1 per cent procaine hydrochloride. For the technic, see Moore's monograph (1954). Many patients undergoing block immediately show visible increase in tone and partial return of motor function. Corticosteroids, such as dexamethasone, in doses of 0.75 mg. four times daily, should be started in an effort to reduce secondary edema. Nicotinic acid given parenterally and orally appears to have merit. Administration of human fibrinolysin might be considered in older persons in whom the likelihood of thrombosis is greater. Anticoagulants should be used where thrombosis is suspected.

When all medical efforts fail, decompression of the facial nerve in the fallopian canal with meticulous neurolysis is recommended.

Supportive measures are important. Galvanic stimulation of the paralyzed muscles should be demonstrated to the patient and he should obtain a stimulator for use at home three times daily. The patient can be given instructions on how to apply a sling of cellophane tape to support the paralyzed muscles. Massage should be carried out, and an eye patch worn to prevent xerophthalmia.

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Biochemical investigation of human saliva

A. Kröncke. *Deut.Zahnärztebl.* 14:523-528
Sept. 8, 1960

The oxygen consumption of the microbial flora of human saliva may be related to the susceptibility or resistance (immunity) to dental caries. This hypothesis offers the opportunity to use the respiration rate of saliva in investigations of individual caries susceptibility as was done by Kröncke and Naujoks (1954 and 1956), Eggers Lura (1944, 1949 and 1956) and Kothe and Schützmannsky (1957 and 1959).

In the majority of instances reported by these authors, the rate of oxygen consumption of the microbial flora in the saliva differed significantly between individuals. The addition of monosaccharides and polysaccharides to stimulate saliva in vitro caused an increase in the respiration rate of the salivary microbial flora. The addition of glucose to the saliva produced an apparent increase in the respiration compared with the addition of starch. Statistical evaluation of the percentage increase in salivary respiration caused by these carbohydrates, however, revealed no significant difference in their effect on caries susceptibility or resistance.

Concentrations of fluorine (fluoride ions) up to 200 ppm showed little effect on the rate of the oxygen consumption of the salivary microbial flora if no carbohydrates were added. However, the same concentrations of fluorine exerted a moderately depressing effect on the oxygen consumption of the microbial flora of the saliva, if carbohydrates in a final concentration of 2 per cent had been added.

With the exception of calcium fluoride, all the fluoride compounds studied, when added to stimulated saliva in a final concentration of 1.6 per cent, depressed the oxygen consumption by

amounts ranging from 44 per cent to 78 per cent. Calcium fluoride in a concentration of 1.6 per cent caused a decrease in the oxygen consumption of less than 10 per cent.

It can be assumed, therefore, that in the decrease in the oxygen consumption of human saliva lies the explanation of the caries-reducing mechanism of fluorine.

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**Copper and cobalt levels in human saliva
and dental caries activity**

S. Dreizen, H. A. Spies, Jr., and T. D. Spies.
Deut.med.J. 11:111 July 20, 1960

Fourteen subjects contributed saliva samples for a quantitative and qualitative analysis of trace elements. More than 20 samples of paraffin-stimulated saliva obtained from 11 of the 14 subjects were examined spectrographically. All these subjects had a history of clinical and laboratory evidence indicating susceptibility to dental caries.

It was determined that the saliva samples contained copper regularly, cobalt occasionally and nickel and molybdenum not at all. Copper was present in amounts ranging from 10 to 47 mg. per hundred cubic centimeters in all samples. Cobalt was present in about one third of the samples, the maximum concentration being 12.53 mg. per hundred cubic centimeters of saliva.

In vitro studies revealed that in the maximum quantities available in human saliva, neither copper nor cobalt influenced caries activity by a bactericidal or bacteriostatic action which could prevent the growth of lactic acid producing lactobacilli, streptococci or staphylococci. This was demonstrated by acid production in the saliva and the undisturbed growth of an oral acidogenic strain of *Lactobacillus acidophilus*. The concentrations of copper or cobalt required to inhibit acid production in whole human saliva greatly exceed those found to be present in the saliva samples examined.

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Pathology

**Osteitis fibrosa localisata
of the jaw region?**

Carl Heidsieck. *Deut.zahnärztl.Zschr.*
15:879-885 June 1, 1960

Osteitis fibrosa localisata of the jaws, a diagnosis usually based on the histopathologic findings of biopsy specimens, may characterize different clinical phenomena such as (1) central giant cell tumor (benign or malignant myeloid sarcoma); (2) fibrous dysplasia or cystic osteofibromatosis (Jaffe-Lichtenstein disease); (3) osteitis deformans (Paget's disease), or (4) primary chronic osteomyelitis.

The simple acceptance of the anatomicopathologic term osteitis fibrosa localisata, therefore, no longer is justified, especially if used in instances in which the jaws are involved. Clinically, it is necessary to search for the causative factor or factors in all patients exhibiting an enlargement of the jawbone associated with extreme tenderness and a specific dull pain. The term, osteitis fibrosa localisata, may be applied only in isolated instances in which a clinical differentiation—after all diagnostic possibilities have been tried—appears to be hopelessly deficient.

The case reports 1 and 2 of this study demonstrate that the anatomicopathologic term, osteitis fibrosa localisata of the jaw, cannot be accepted by dental practitioners for clinical diagnosis.

Case 1. A 68 year old woman with a history of polyostotic osteitis deformans (Paget's disease) was examined clinically and treated at the Clinic of Oral Surgery of the Humboldt University (Charité) in Berlin. Roentgenographic examination of the skull (Fig. 1) revealed that all bony parts of the maxillofacial region, with the exception of the mandible, were involved in the characteristic changes. The maxilla showed an immense swelling which prevented the patient from wearing her upper complete denture. An oste-

otomy was performed to restore the facial appearance, at least partially. The fragments which were removed from the alveolar process were sent to the histologic department for examination. The histopathologic findings were as follows: presence of an osteitis fibrosa localisata of the mandible in the form of an osteodystrophia fibrosa without inflammatory cancerous affection usually associated with Paget's disease. The clinically observable symptoms such as the significant increase in alkaline phosphatase in the serum, the curvature of the long bones and deformation of the flat bones, however, made the diagnosis of osteitis deformans (Paget's disease) certain. Although the absence of an inflammatory cancerous affection in histologic specimens taken from patients with this disease is rare, Hellner (1958) demonstrated that unspecific histologic findings in such instances do not exclude the presence of osteitis deformans affecting primarily the maxilla.

Case 2. An 18 year old woman was examined at the clinic. An initial diagnosis of tumor of the mandible in the region of the ascending ramus was made. The tumor was about the size of a fist. The histopathologic findings made after examination of biopsy specimens was osteitis fibrosa localisata of the mandible. The clinical roentgenogram (Fig. 2), however, revealed the presence of a central giant cell tumor. After surgical enucleation of the tumor, the histologic examination of the specimens verified the clinical diagnosis.

Case 3. An eight year old girl with an enlarged mandible was examined at the clinic. According to her mother, the enlargement had been observed in early infancy; and had been continuously increasing in size since she was four years old. There were no complaints of discomfort or pain. The histologic examination of biopsy material resulted in the diagnosis of osteitis fibrosa localisata. The clinical roentgenogram (Fig. 3), however, revealed the presence of a fibroma showing all the characteristics of ostotic fibrous dysplasia of the right side of the mandible (Jaffe-Lichtenstein disease).

Case 4. A seven year old girl with an extreme enlargement of the right side of the mandible, especially in the molar region, was seen at the clinic. No conclusive data were provided by the patient's history. The histopathologic examination of biopsy specimens resulted in the diagnosis of an



Figure 1 (Left) Osteitis deformans (Paget's disease) involving the entire skull except the mandible

Figure 2 (Below) Central giant cell tumor (benign myeloid sarcoma) of the mandible

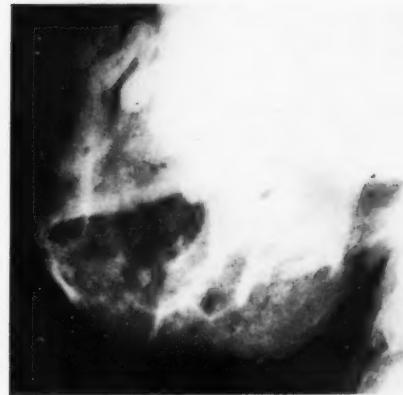
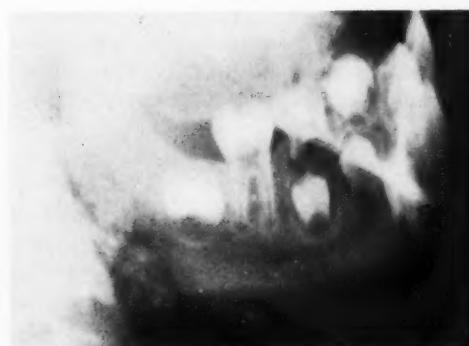


Figure 3 (Left) Cystic osteofibromatosis (Jaffe-Lichtenstein disease) involving mainly the right side of the mandible

Figure 4 (Above) Chronic osteomyelitis of the mandible spreading to adjacent tissues



osteitis fibrosa localisata of the mandible. The clinical roentgenogram (Fig. 4), however, revealed the presence of a chronic osteomyelitis of the mandible. There was an excessive inflammation of osseous tissue, probably caused by an undetermined pyogenic microorganism. The inflammation had spread from the right side of the mandible to the adjacent tissues involving the marrow, cortex, cancellous tissue and periosteum.

These four case reports demonstrate that clinical treatment of patients with osteogenic defects in the maxillofacial region cannot be based on the purely histologic findings, osteitis fibrosa localisata of the jaws. This clinically unsatisfactory term may be applied only if no other diagnostic differentiation can be made.

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Meningitis and encephalitis caused by viruses

Werner Scheid. *Deut.med.Wschr.* 85:837-841
May 6, 1960

The numerous types of meningitis (inflammation of the three meninges that envelop the brain and the spinal cord: dura mater, pia mater and arachnoid), if caused by specific viruses, not only resemble symptomatically certain forms of encephalitis (inflammation of the brain) but are, in fact, encephalitides.

Histologic and histopathologic studies, carried out at the Neurological Institute of the University of Cologne, have demonstrated the identity of these inflammatory diseases, although no textbook has given clinical evidence of encephalitis caused by viruses. The highly variable nature of clinical symptoms obviously has prevented an accurate etiologic determination.

Even the type of paralysis associated with poliomyelitis may also occur in other virus infections, for instance in Central European encephalitis. Acute nonbacterial meningitis, however, must be regarded as a clinical entity.

Evidence of the existence of an allergic form of meningitis is lacking. Among the various types of meningitis caused by viruses, lymphocytic choriomeningitis plays an unimportant role, but the disease does occur in Central Europe. An en-

demic form of this disease was discovered recently in Bremen.

Mumps meningitis, if unaccompanied by orchitis or parotitis, must be based on laboratory findings such as complement fixation reactions to V and S antigens.

Several strains of the enterovirus group are capable of producing meningitis or encephalitis. However, the role of specific viruses such as the ECHO virus, isolated from the oral cavity or the gastrointestinal tract, in the causation of meningitis or encephalitis has not been established. Immediate isolation and serologic demonstration of the causative microorganism are of great importance in the diagnosis, especially if the presence of enteroviruses is suspected. The results of the complement fixation reaction with polio antigens are often misleading, especially in instances in which oral manifestations have been observed. The combination of laboratory findings and clinical observations is essential to obtain an accurate diagnosis.

Laboratory tests made early in the course of the disease and repeated later are of significant value and should be ordered by physicians and dentists observing patients with either meningitis or encephalitis suspected as being caused by viruses.

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Mandibulofacial dysostosis: Treacher-Collins syndrome

M. A. Kibel. *Central African J.Med.*
6:244-247 June 1960

Mandibulofacial dysostosis is thought to result from a disorder of the embryo toward the seventh week of life, which causes a derangement of growth and a delayed ossification of the bones deriving from the first visceral arch. The abnormalities which constitute the fully developed syndrome may be listed as follows: (1) the eyes show an "antimongoloid slant," the external angle being drawn downward; (2) the external ears are malformed, being set low down and atrophied; (3) the mouth is large, the palate highly arched and the dentition frequently abnormal; (4) the malar bones are underdeveloped with small malar

ridges, and the zygomatic arch is absent; (5) the mandible being hypoplastic, the chin recedes and the angle of the jaw is obtuse, often causing an open bite; (6) the normal angulation between nose and forehead is obliterated and the bridge of the nose raised, and the nose is large, with short columellae, narrow nares and small lateral cartilages, and (7) the occipitoparietal region is flattened and the occipitofrontal diameter lengthened.

Two additional peculiarities often present are tongue-shaped projections of hair on the cheek and blind fistulas between the mouth and the ear—along the lines of coalescence of superficial gill clefts.

The complete picture—a fishlike face with sloping eyes, sunken cheekbones, a large mouth, receding chin, abnormal ears, and absence of the frontonasal angle—give all persons with this syndrome an appearance which may be recognized at the first glance.

A variety of other abnormalities have been described in association with mandibulofacial dysostosis. Incomplete, atypical and unilateral forms of this syndrome also occur. The hereditary nature of the syndrome has been demonstrated repeatedly; it is an independent genotypic entity transmitted as an irregular dominant.

Apparently, little attention has been given to the surgical improvement of appearance and function. As these patients otherwise may be healthy and intelligent, the problem is a significant one.

A case report illustrates the syndrome.

Bulawayo, Southern Rhodesia

Primordial cysts

M. Shear. *J.D.A. South Africa*

15:211-217 July 15, 1960

Although the primordial cyst is a well-recognized entity, little has been written about it. The primordial cyst is a developmental abnormality, believed to arise from the enamel organ prior to the commencement of tooth formation. It is thought that the stellate reticulum breaks down to form the cyst cavity; that the internal and external enamel epithelia form the epithelial cyst lining, and that the fibrous cyst wall is formed from the dental follicle. Primordial cysts develop either from an

enamel organ of the normal dentition or from a supernumerary bud.

This report is based on observations on 22 primordial cysts. The patients ranged in age from 14 to 67 years, the cysts occurring most frequently in the second and third decades of life. Ten of the cysts were in patients between the ages of 14 and 27 years. Ten cysts occurred in female and 12 in male patients.

Nine of the cysts appeared in the mandibular third molar region, three in the mandibular bicuspid region, and two extended throughout the whole body of the mandible. Three cysts occurred in the maxillary third molar region, three in the maxillary bicuspid region and one in the maxillary cuspid region.

Primordial cysts tend to be symptomless and, unless discovered by routine roentgenographic examination, may grow to an extremely large size. Roentgenographically, they appear at an early stage as small, round radiolucent areas, either in the position of a tooth germ of the normal dentition or in a supernumerary position. When they grow to a large size, they may appear as round or ovoid radiolucent areas demonstrating extensive bone destruction. In the ascending ramus they frequently give a false appearance of multilocularity and may be mistaken for adamantinomas.

The clinical and roentgenographic appearances are not sufficiently specific to enable a definite diagnosis of primordial cyst. However, the primordial cyst shows a number of histologic features which render the diagnosis fairly certain. The main histologic features are: (1) a regular, thin lining of stratified squamous epithelium, with no rete pegs; (2) the presence of a keratinized layer on the surface of the epithelium; (keratin frequently is present within the cyst cavity); (3) a relative absence of inflammatory cell infiltration, and (4) the presence of columnar basal cells with either pyknotic or vesicular nuclei. Those cysts which have grown to a large size have extremely thin walls, and when removed at operation collapse and become folded.

Primordial cysts are simple lesions which will not recur after enucleation, and are not infiltrative. Nevertheless, it is important that the primordial cyst be diagnosed readily, because the roentgenographic appearance, particularly of those cysts involving the ascending ramus of the man-

dible, may be confused with those of adamantomas for which the treatment differs significantly. The afore-mentioned histologic criteria appear to be sufficiently constant to make the diagnosis of primordial cyst fairly certain.

Primordial cysts may occur anywhere in the mouth by extension or additional offshoots of the dental lamina, but they are found most frequently in the region of the mandibular third molar. Because of the great bulk in this region, it is here that the cysts are least likely to be discovered until they have reached a large size. Primordial cysts are not as rare as suggested by Bernier (1955) and probably form about 10 per cent of all epithelial-lined cysts of the jaws.

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**Case records
of the Massachusetts General Hospital**

Benjamin Castleman. *New England J. Med.*
263:647-654 Sept. 29, 1960

A 26 year old man had entered the hospital because of a mass in the neck which had appeared six months earlier, enlarged for a week and then remained stationary. A biopsy of the supraclavicular node revealed the presence of Hodgkin's disease. A course of radiation therapy to the mediastinum and right supraclavicular region caused reduction in the size of the mass.

The second admission to the hospital was 13 years later. Eighteen months before admission, severe hemorrhages occurred after extraction of a tooth. One month later there was pronounced epistaxis, necessitating transfusions of blood. The bleeding time was prolonged, the clotting time was normal, with good retraction, the prothrombin content was 80 per cent, the prothrombin consumption was 82 per cent, the

fibrinogen was 0.6 Gm. per 100 ml., and the platelets were normal. The thromboplastin generation was 44 per cent of normal, and the anti-hemophilic globulin was 45 per cent.

Fifteen months before the second admission, another tooth extraction was followed by massive bleeding.

In a review of the over-all case history and consideration of a differential diagnosis, it is observed that a year and a half before the second admission, presumably about 12 years after the onset of Hodgkin's disease, a hemostatic complication became evident after tooth extraction. Such a procedure constitutes one of the most significant hemostatic tests that can be invoked. Capillaries, arterioles and venules are torn across, and there is no opportunity for extracellular hemostatic factors to prevent blood loss since the blood can extravasate freely into an open cavity. It is safe to say that a patient with a possible hemorrhagic disorder who undergoes a tooth extraction without difficulty probably has an intact hemostatic mechanism at that time. The corollary is obvious—the dentist always should obtain a careful hemostatic history before tooth extraction.

After the earlier experience with tooth extraction, one would expect the attending physicians to have hesitated to sanction a second extraction.

At operation, it was found that the patient had extensive amyloidosis of the bowel. The patient died soon after the operation and at autopsy it was found that almost every lymph node was completely replaced by amyloid, as were the vessel walls around the lymph nodes.

The anatomical diagnoses revealed Hodgkin's disease, with involvement of retroperitoneal lymph nodes and spleen; amyloidosis, generalized, involving small and large intestine, with hemorrhage and perforation; bleeding tendency due to amyloidosis or serum clotting defect of unknown nature, and acute peritonitis.

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**Cancer of the oral cavity
from the dentist's point of view**

E. Husted. *Proc. Roy. Soc. Med.* 53:771-774
Sept. 1960

The task of the family dentist regarding cancer of the oral cavity is chiefly diagnostic. Even though cancer of the oral cavity is rare as compared with the incidence of the simple benign conditions seen daily in dental practice, the dentist should be observant of any suspicious findings. Easily aroused suspicion and subsequent detailed investigation are the primary conditions for early diagnosis. The chances of early diagnosis of cancer of the mouth will be increased considerably when all dentists are aware of the occurrence and the clinical picture of this condition in the early stages, and of the significance of the time factor.

Early cancer in certain locations of the oral cavity may well simulate simple diseases of the soft tissues for which the dentist's advice is normally sought, and thus be brought first to his notice. The dentist should extend his investigation to cover not only the teeth and periodontal tissues, but the oral cavity as a whole, lips, cheeks, palate, tongue, sublingual region and the part of the throat available for inspection. The investigation will be prolonged by only a few minutes if nothing is wrong; if something suspicious is found, more detailed investigation will reveal a malignant condition much earlier than would otherwise have been possible.

Meticulous examination of the oral cavity may be carried out without giving rise to anxiety or cancerophobia in the patient; where something suspicious is found so that it is necessary to refer the patient for more detailed and special investigation, it is important that this be done as tactfully as possible without alarming the patient unnecessarily but also so that no valuable time is lost.

Symptomatic treatment carried out for a prolonged period when the diagnosis is uncertain is one of the most serious errors which can be committed.

Although the majority of dentists will see only isolated instances of oral cancer, or perhaps none at all, during many years of practice, the matter is extremely serious for the individual patient so that all measures available must be employed to ensure the diagnosis as early as possible.

As a rule, in the early stages the disease does not show any clinical symptoms which are so characteristic that it is possible immediately to establish the diagnosis. From a dental viewpoint, gingival cancer is of special interest. Patients with gingival cancer frequently consult their dentist when they notice the first symptom of loosening of one or more of the teeth and interpret the condition as "inflammation of the gums."

Gingival cancer occurs most frequently in the lower jaw and particularly distally; the retromolar trigonum is a typical site. The patients most frequently are elderly and often edentulous, but younger patients and even children may be affected with gingival cancer. In the early, and diagnostically important, stage the appearance frequently is uncharacteristic, and may be merely a little nodule or ulceration, possibly only a fissure localized typically in a region of leukoplakia or a little flat or papillomatous tumor. A certain hardness of the tissue, particularly in the surrounding infiltrated tissue, is characteristic of the malignant lesions, and palpation is an important part of the investigation which never should be omitted. During the continued growth of the tumor, it will, as a rule, become adherent to the underlying bone and invade this; the teeth situated in the vicinity frequently loosen; for this reason, the cancerous lesion occasionally is regarded as an ordinary chronic periodontal disease. In dental practice, the greatest risk of confusion is primarily with simple ulcer formation such as pressure sores and periodontal conditions of inflammatory nature. If the supposed source of pressure is removed, that is, by removal of the prosthesis, a pressure sore should rapidly become clean and heal. If a definite tendency toward healing is not observed in about a week, the ulcer should be suspected of being malignant and the diagnosis established by biopsy.

Biopsy should be undertaken in all instances in which clinical investigation has raised suspicion of malignancy or in which, during the treatment of a supposedly simple condition, unexpected or atypical findings are encountered which do not fit in with the original diagnosis. While awaiting the result of the microscopic examination of the biopsied material, the dentist should plan the action to be taken if the diagnosis of cancer is confirmed, so that no further time is lost.

The treatment of cancer of the oral cavity is an exacting specialty in which the [family] dentist's cooperation is not infrequently required but for which he should, under no circumstances, take the sole responsibility.

If a dentist finds indications for extraction of teeth or remnants of teeth in a patient suspected to be suffering from cancer, he should not perform the extraction until the diagnosis is established; if the diagnosis of cancer is verified, the extraction should be carried out only in collaboration with the surgeon responsible for the treatment of the tumor.

When a patient with cancer in the oral cavity is to receive radiation therapy, special problems arise regarding the teeth. In the regions within the radiation field, all teeth should be removed regardless of their condition. The extent of the extraction and the appropriate time must be established in collaboration with the radiotherapist. In patients who already have received radiation therapy for conditions in the oral cavity, even the apparently simplest dental extraction should not be undertaken, whatever the indications, until information has been obtained concerning the extent of the treatment administered.

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**Neoplastic infiltration
of the aponeurosis in instances
of mixed tumors of the parotid gland**

Giancarlo Pennisi. *Rass.internaz.clin.ter.*
50:147-158 Aug. 1960

During the period from 1954 to 1959, 343 patients with mixed tumors of the parotid gland were observed at the Anatomicopathological

Histological Institute of the University of Naples, Italy. According to the histologic findings, the majority of these tumors originated from endothelial or epithelial tissues, the minority from the mesenchymal tissue.

During a prolonged benign phase, most of the tumors remained within their capsules. However, during a second (mainly malignant) phase, the tumors invaded their aponeuroses, extending gradually to other regions of the oral cavity.

Comparative anatomic studies were made on the parotid glands obtained either from fetuses at term or from embryos well-advanced in development. By examination of the horizontal sections it was possible to determine the contour of the parotid gland and to recognize the topographic position of the vascular peduncle which represents the internal apex of the gland.

According to the classic anatomic concept, the parotid gland is completely enclosed in a split layer of the superficial cervical aponeurosis. However, the modern concept (verified by the results of this study) holds that the parotid gland is positioned outside of the aponeurosis, and that a major part of the gland remains uncovered.

In instances of mixed tumors (during the benign phase) of the parotid gland, dividing walls (septums) extend from the tumor capsule, thereby parting the tumorous tissue into several lobes. Long epithelial canaliculi occur along the septums.

In instances of mixed tumors (during the malignant phase) of the parotid gland, the septum becomes extremely thin as a result of the increased growth rate of the tumor. This thinning of the septum usually is followed by infiltration and perforation of the aponeurosis, and by formation of a neoplastic mass which soon surrounds the original tumor.

In instances in which the vascular peduncle at the internal apex of the parotid gland becomes involved in the tumor growth, a route for emigration of neoplastic cells to distant regions is rapidly established.

The anatomicopathological and histopathological facts are of importance for treatment of mixed tumors of the parotid gland, and must be considered before such tumors are to be excised.

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Dentistry in Norway

Sven Utheim Toverud. *Harvard D. Alumni Bul.*
20:66-72 April 1960

The one dental school in Norway, the Dental College of the University of Oslo, was, before September 1959, an independent institution similar to the schools of agriculture, engineering and veterinary medicine. The dental school has a staff of 80, with eight full professors and six associate professors. It has its own departments of anatomy, physiology-biochemistry, pathology, bacteriology and pedodontics in addition to the regular clinical departments. The school offers a four-year course for students who have completed secondary school, the gymnasium (equivalent to high school plus one or two years of undergraduate college of liberal arts). Fifty students are admitted annually on the basis of competitive examinations from the gymnasium. The general plan of study is essentially the same as that for most dental schools in the United States. The department of periodontology includes the division of crown and bridge prosthesis. Weekly lectures in caries prevention are given by the staff of the department of pedodontics. On graduation, the student receives the degree of cand.odont. (Candidate of Odontology), whereupon the federal Department of Social Affairs issues the license to practice dentistry.

The shortage of dentists presents a problem. A new dental school at the University of Bergen will be built by 1962. Five hundred Norwegians have studied dentistry abroad, mainly in Germany, but also in England and Scotland. The education of these dentists, on their return to Norway, is supplemented with a compulsory five-month course covering all the clinical disciplines, but with emphasis on pedodontics, operative dentistry and crown and bridgework. For the past two years, about 40 candidates each semester have undergone this supplemental training.

Advanced education for the practicing dentist consists mainly of refresher courses and the training of specialists, both arranged by the Norwegian Dental Association. Oral surgery and orthodontics are the only two specialties recognized. The training takes about four years plus two years of private practice; Norway has 16 specialists in orthodontics and 4 specialists in oral surgery. The Norwegian Medical Association has issued specialization certificates in maxillofacial surgery to 15 dentists who also are physicians and who have been trained in general and head and neck surgery in addition to oral surgery.

Both space and funds are lacking for training dental teachers and research workers. Eight research fellowships are available. The advanced degree, Doctor of Philosophy or Doctor of Odontology, has been the goal for many dentists interested in research and teaching. The thesis is based on elaborate original research which usually takes years to complete. Plans for postgraduate study were adopted this year. The program takes about three years to complete, and leads to a special degree, the Degree of Licentiate.

The first school dental clinic in Norway was started in Oslo in 1910. Seven years later, the Parliament enacted a law by which school dental services were organized in all cities, with free care for children from 7 to 14 years old. Today, about 80 per cent of all school children receive free dental care. In the larger cities dental care also is offered to the children in the age groups from 3 to 6 and from 14 to 18 years old, for a small registration fee. A limited number of children whose parents cannot afford to pay the fees of a private orthodontist receive treatment at orthodontic clinics.

Of the 2,380 dentists in Norway, 820 are employed in the School Dental Service, almost a half of them full-time. Seventeen per cent of Norwegian dentists are women.

Although Norway has one of the highest dentist:population ratios (1:1,600) in the world, the geographic distribution of dentists in 1950 was very unfavorable to the rural population. This situation led to creation of the Public Dental Service, formed in 1949. The service is administered by the Health Directorate in the Department of Social Affairs through a chief dental officer for each of the country's 20 provinces. By law,

the Health Directorate can call all graduates of the dental school to a maximum of two years' service in the public dental clinics or in the school dental clinics. The law expires in 1961 and it is assumed that a renewal will not be necessary because of the increased number of dental graduates.

About 125 dentists serve in the public dental clinics, almost all on a full-time basis and most of these stationed in rural districts. The staffs of some school dental clinics and public dental clinics include dental hygienists. These have been trained at the dental school since 1924. Courses for chairside assistants also are given at the dental school.

Dental research is being carried out chiefly under the auspices of the Oslo University Dental School and the Odontological Research Institute. The National Institutes of Health in the United States recently granted \$60,000 to the Research Institute to be used over a five-year period for a project concerning topically applied caries-preventive agents.

Most Norwegian dentists are in private practice. All patients are free to choose between a private practicing dentist and a public clinic. Adults in most parts of the country are forced to seek the services of a private dentist, but they have some benefit from belonging to a welfare state. About 50 per cent of the cost of all surgical treatment is covered by the compulsory public health insurance plan. All restorative dental treatment must be paid for in full by the patient.

Norwegian dentists use only the most modern instruments and equipment, imported from Germany, England, Sweden and to some extent from the United States. The routine use of x-ray equipment in all phases of dentistry is universal.

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Dentistry in Asian countries

W. C. Allwright, R. J. S. Tickle
and S. Matsumiya. *Internat.D.J.* 10:327-349
Sept. 1960

To obtain information on the present status of dentistry in Asia, a questionnaire was mailed in 1957 and 1958 to authorities in 17 countries with a combined population of nearly eight hundred

million people. In these 17 countries, the estimated number of dentists of all kinds is 54,910, of whom only 34,226 possess dental qualifications. Therefore, the proportion is one dentist to 14,150 people, but only one academically qualified dentist to 22,700 people. In Japan there is one qualified dentist to 3,700 people, and in the Philippines, 1 to 3,100 people. Of the 34,226 qualified dentists, 24,450 are in Japan and 7,000 in the Philippines.

Dental auxiliaries are employed in all the 17 countries reviewed, but in only 11 are "operating" auxiliaries recognized. In only four countries—Nationalist China (armed forces only), Japan, the Philippines and Thailand—are dental hygienists recognized. Dental nurses of the New Zealand type are employed in seven countries—British North Borneo, Ceylon, Hong Kong, Indonesia, Malaya, Sarawak and Singapore—, of which three—Ceylon, Indonesia and Malaya—have their own training schools. In no Asian country are dental prosthetic technicians permitted to perform dental procedures directly for the patient.

All the 17 countries employ at least one full-time dentist in the public service. In the 17 countries there are about 1,252 dentists in full-time employment in public service, a proportion of one dentist to about 620,000 people. Of the 1,252 dentists in public service, 255 are in Japan, 303 in the Philippines, and 200 in Thailand.

There is an acute shortage of private dental practitioners in almost every Asian country.

With few exceptions, the numbers of new dental graduates per year in the various countries are grossly inadequate, and in most countries of Asia there will be a serious shortage of dentists for many years to come.

In recent years there has been a desire to raise the standards of the dental profession, but considerable difficulties are experienced in attracting sufficient men and women of satisfactory education to undergo courses at a university level. The fact that the traditional dentist has a low social status also makes the profession less attractive. In most Asian countries the economic condition of the people is low, and they are unable to support the increased costs associated with modern dentistry.

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History

**The study of medicodental history
in its significance and purposes**

Amedeo Bobbio. *Rev.A.Paul.Cir.Dent.*
14:145-154 May-June 1960

The expression "dental history" suggests a separation from "medical history." This, however, is not exactly true. The history of medicine and the history of dentistry are indissolubly united, the second being simply one aspect of the first. The reason for this artificial and to a certain extent antihistorical separation lies in the tendency of modern medicine to transform itself into an incredible number of departments or specialties, which often threaten to obscure the view of the whole. Writing of excessive specialization in his day, Cicero asked ironically (*De oratore*, II), "Do you suppose that when Hippocrates of Cos lived there were some doctors who treated diseases, others who treated wounds, and still others who treated the eyes?" What, then, would Cicero think today?

In fact, in the profound ancestral conception of medicine, nothing of this sort exists; we are face to face solely with the eternal drama of pain and fear, whether they are found in the first men or in animals. From this twofold cause springs the spark of medical thinking, which is an expression of humanity's loftiest attribute—its spirit.

The course of medical or dental thought is not static, yet it must not be supposed that its progress has been one of constant ascent. On the contrary, it has been characterized by many declines and recoveries. The wonders of pneumothorax, thoracotomy, and streptomycin may enable us to look today with comparative assurance

at tuberculosis, which for centuries was synonymous with death. But how many lives could we not have saved if we had only paid greater attention in the past to certain ancient hygienic and sanitary laws, or considered more closely the writings of Fracastoro, who in 1500 pointed out the dangers of contagion in tuberculosis?

Similarly, in the field of dental prosthetics, if we consider the remarkable fixed bridges of the Etruscans of the fifth and fourth centuries B.C., or the upper complete prostheses of gold found in the imperial Roman epoch, we cannot but marvel at the incredible decline suffered by prosthetics in medieval times.

How did these accomplishments come to be so completely forgotten during the later periods of decline? Two facts supply the answer. First, there was a general ignorance of history, and, second, the day in April 1485 which marked the beginning of the archeological era, had not yet dawned. On that day, in the suburbs of Rome, near the Appian Way, a marble sarcophagus was found containing the marvelously preserved body of a young Roman girl of great beauty. Later exposed to public view, it was visited by more than 20,000 persons in a single day. This discovery, though accidental, may be said to have initiated the life of archaeology. Interest was aroused, other discoveries followed, and a world that had been silent for thousands of years began to speak again, confirming the words of the ancient texts.

Many are the examples that might be cited to show the value of a true knowledge of the past in elucidating the problems of the present and in preparing us to meet the future. Unquestionably, the course of medicine and dentistry can be likened to a great polychrome mosaic produced by the labor of many workers, most of whom are now lost in anonymity but all of whom were needed to create the harmony of the whole. From the study of this mosaic, in which the history of the past is enshrined, comes the inspiration and the impulse for tomorrow's advances.

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The Academy of General Dentistry

George A. Holmes. *Texas D.J.* 78:9:15-17
Sept. 1960

Information that only about 10 per cent of general practitioners of dentistry take formal postgraduate courses in any one year greatly influenced the formation, in early 1952, of the Academy of General Dentistry. The Academy was founded in Chicago, with the encouragement of Isaac Schour, dean of the University of Illinois College of Dentistry, and of J. Marchmont-Robinson, a physician who founded the Academy of General Practice in Medicine.

Membership requirements in the Academy of General Dentistry consist of affiliation with organized dentistry, 50 hours of formal school attendance every three years, and a minimum attendance at 50 per cent of scientific sessions at the member's local dental society. The general practitioner who supports this program is likely to benefit through increased income potential, higher status and public esteem, closer equality with the attainments of the research man and the specialist, and annual certification of effort.

The aims and ideals of the Academy have been approved by the dental profession. Dental journals have been cooperative in reporting Academy activities. Deans of 20 dental schools and four editors of ethical dental journals have accepted honorary membership in the organization.

The efforts toward general self-improvement fostered by the Academy may preclude the necessity of having a state board re-examine and re-certify each dentist every five years, as has been advocated by some members of the profession as a means of assuring that dentists keep abreast of the advances of science. The challenge in all science

today is to keep up with the great progress being made. Dentistry as a profession has made liberal contributions to scientific progress. Changes and improvements, new methods and materials just in the last quarter of a century, stagger the imagination. It is not encouraging that the average dentist during his life of practice goes back to school only about three times for as many weeks.

Dental schools should not be blamed for this apathy. Most dental schools have been offering postgraduate programs since 1920. The cost of any type of higher education seldom is covered by tuition alone. The budgetary difference must be made up through endowment or from other sources. This is particularly true of professional education, where individual supervision and resultant small classes often are essential. The problem of minimizing productive time away from the office has been met at many schools by scheduling postgraduate instruction on Wednesdays, weekends or during evening hours.

The development of numerous study clubs in the past 50 years indicates a desire by dentists for further knowledge, and has partially compensated for the failure of some dentists to obtain formal postgraduate instruction. One certain way to foster the general practitioner's interest in continuous, formal, postgraduate education is to develop an organization dedicated to such a program. This was a basic factor behind the establishment of the Academy of General Dentistry. The Academy aims to elevate the quality of service the profession renders the public, through continuous study. To this end the Academy cooperates with the dental schools, the Council on Dental Education of the American Dental Association, and all organizations with a similar orientation.

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forensic dentistry

Infamous or disgraceful conduct*Brit.M.J.* No. 5188:1819-1820 June 11, 1960

Judgment in the first appeal to the Judicial Committee of the Privy Council from the Disciplinary Committee of the General Dental Council under the Dentists Act, 1957, was delivered on May 11, 1960. The appeal was successful. The judgment is of considerable importance to the dental profession, as it construes the words "infamous or disgraceful conduct in a professional respect" in Section 25 of the Dentists Act, 1957; it is of interest to the medical profession because of the similar words in Section 33 of the Medical Act, 1956. These two sections provide that practitioners be struck off the register if convicted of a crime falling within certain limits. A dentist is liable to be struck off if he has been guilty of "any infamous or disgraceful conduct in a professional respect."

The appeal in this case was brought by Dudley Ernest Lincoln Wager Felix, a 29 year old native of Sierra Leone, and a dentist registered under the Dentists Act, 1957. The appeal was from a determination of the Disciplinary Committee that he had been guilty of infamous or disgraceful conduct in a professional respect.

The charges against Mr. Felix were overcharging and wrongful certification. The Disciplinary Committee found that Mr. Felix had wrongfully charged for three fillings which had not been done (involving a charge of \$15.05). His position on these charges was that he admitted the overcharging but denied that it was done with any fraudulent or dishonest intent; it was simply due to carelessness.

The Disciplinary Committee also found that Mr. Felix had wrongfully certified that 16 fillings were required when in fact 13 of them were unnecessary. Mr. Felix admitted making the certificate, but it was not disputed that he had done

three of the fillings, and he throughout contended that 10 old fillings were defective and needed replacement, and that the other three fillings were suspect.

The question therefore was whether the conduct of Mr. Felix was "infamous or disgraceful conduct" within the proper interpretation of those words in the statute.

Although the words "infamous or disgraceful conduct" have to be construed in conjunction with the words "in a professional respect," the Judicial Committee considered that the two adjectives remained as words denoting conduct deserving of the strongest reprobation, and indeed so heinous as to merit, when proved, the extreme professional penalty of striking the guilty person from the register. They held that to make good such a charge there must, generally speaking, be: "Some element of moral turpitude or fraud or dishonesty in the conduct complained of, or such persistent and reckless disregard of the dentist's duty in regard to records as could be said to amount to dishonesty for this purpose."

The appellant's conduct did not fall within this scope, and therefore his appeal was allowed and the General Dental Council ordered to pay the costs of the appeal.

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The dental malpractice problem*Charles A. Levinson. Massachusetts D.Soc.J.*
9:2:19 April 1960

Dental malpractice claims are increasing rapidly all over the country. Dental malpractice is the failure on the part of a dentist to perform properly the duty which evolves on him in his professional relationship to his patient, resulting in some injury or harm to the patient. The dentist must possess and exercise that degree of skill

commonly possessed and exercised by other dentists practicing in the same locality. He must keep abreast of the times, follow an approved method in general use, and exercise his best judgment. Malpractice may be the result of ignorance, willfulness or negligence.

Here are some rules every dentist should follow to guard against malpractice claims:

1. Avoid arguments with patients who complain of grievances. Keep on good personal terms with the patient.
2. Keep complete, accurate records.
3. Refrain from guaranteeing or promising a good result.
4. Follow approved methods of practice.
5. Be just as careful in postoperative treatment as in the operation.
6. When faced with an extraordinary situation, do not delay or otherwise avoid the issue. If in doubt, call in another dentist for consultation, preferably a specialist in the indicated type of treatment.
7. Never conceal any important fact from the patient.
8. When confronted by a serious question of law pertaining to dental practice, seek the advice of your insurance company.
9. Do not criticize another practitioner's work.

10. Do not make any statement that may be construed by the patient as an admission of fault or guilt on your part.

11. Avoid accidents in the handling of caustic medicaments, burs, disks and stones.

12. Make constant use of roentgenography. Perform no surgery without preoperative roentgenograms.

13. Do not release roentgenograms or other records to the patient.

14. Use an assistant when general anesthesia is indicated.

15. Do not inform the patient or his representative that you carry malpractice insurance.

16. The courts require original records. Keep them.

17. Observe the manufacturer's instructions on drugs and appliances, labels and contents of bottles and containers, and the effects of any appliance used.

18. Have an understanding on fees, especially if the fee is high or the payment is a problem.

19. Avoid short cuts in arriving at the diagnosis.

20. Show a personal interest in the patient's progress and comfort.

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**The vascular architecture
of the human dental pulp**

I. R. H. Kramer. *Arch. Oral Biol.* 2:177-189
Aug. 1960

A method, described by the author in 1951, for filling the pulpal vessels of extracted teeth with an injection mass has been modified and improved. Human deciduous and permanent teeth were used. The method of blood vessel injection was similar to that described in 1951, and involves a pulp exposure in the crown of the tooth. When a negative pressure is applied to this exposure the contents of the vascular network are sucked out; if, during this process, the root of the tooth is immersed in India ink, the ink will be sucked in to replace the original vessel contents.

Two solutions are required, 3.8 per cent sodium citrate, and a diluted India ink-sodium citrate injection mass. Better results are obtained if the vessel system is washed through with plain sodium citrate solution before the introduction of the injection mass. The original apparatus has been redesigned to allow this preliminary washing to be carried out conveniently. Suction is supplied by a simple water pump, and a three-way tap is utilized. After the vessels have been washed with the plain sodium citrate solution for 30 minutes, the suction to the tooth is discontinued, the beaker containing citrate solution is replaced by a beaker containing the injection mass, the tap is turned to reapply the suction and 30 minutes is allowed for the injection.

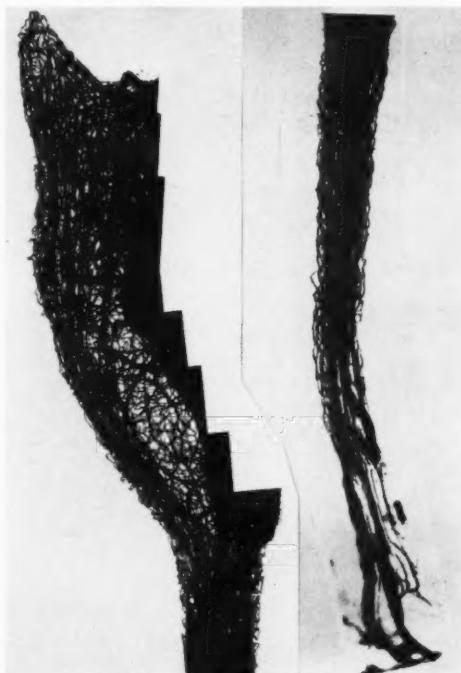
After the specimen has been decalcified by any of the usual methods, the root surface is cleaned. The tooth now is ready for dehydration by using ethyl alcohol and chloroform and infiltration with the material that renders the tissues transparent. Originally, methyl salicylate was used for this purpose, but it has been found that a silicone

fluid, M.S. 710, is an equally good material for rendering the tissues transparent, and it has the advantages of being odorless, nonvolatile, non-toxic, water repellent and nonsolvent.

Examination of conventional histologic sections gives little idea of the remarkable vascularity of the dental pulp. In most teeth, the main blood vessels pass through the apical foramen or foramen, run toward the occlusal aspect of the tooth and give rise to a rich capillary plexus near the periphery of the pulp.

The main arterial vessels are relatively narrow, smooth walled, and pursue a comparatively direct course toward the coronal portion of the pulp. In many teeth, such arterial vessels tend to lie toward the periphery of the pulp (Fig. 1). In their course in a mainly occlusal direction these arteries give rise to a large number of branches

Figure 1 Composite photomicrograph of the injected pulpal vessels in a normal upper second bicuspid from a 26 year old woman. Serial photomicrographs of overlapping fields were taken at high magnification. The composite picture has been assembled from these. Left: one side of the pulp chamber and the coronal portion of the root canal. Right: the rest of the root canal of the same tooth





passing outward to the subodontoblastic capillary plexus.

The veins are much larger than the arteries, their walls are more irregular and the largest veins lie near the central part of the pulp. As the veins approach the apical foramen they appear to become reduced both in number and in diameter.

Although the arteries and veins enter and leave the pulp mainly via the apical foramen, it is not uncommon, especially in multirooted teeth, to find major vessels in other situations. Particularly in the bifurcation or trifurcation region large vessels may run through the radicular dentin to supply one root canal, sometimes appearing to contribute more to the root canal vascular system than the vessels entering the apical foramen (Fig. 2).

Smaller vessels running between the root canal and the periodontal membrane are relatively common. Almost always, these connections consist of a pair of vessels, one large and one small (Fig. 3).

In many tissues the arterial and venous blood flows are joined, not only by the capillary plexus but by direct arteriovenous connections. It is believed that these direct connections play an important part in the local regulation of blood flow.

The peripheral capillary plexus shows features of both distribution and pattern that do not appear to have been described previously. Generally, the plexus is distributed over the whole periphery of the coronal portion of the pulp, and extends for a variable distance into the root canals. Within the root, often it was found that the peripheral plexus was present on only one aspect of the canal, whereas on the other aspect there were only the larger vessels running to and from the coronal portion of the pulp (Fig. 3).

This distribution of the capillary plexus appears to be related to the distribution of odontoblasts.

Figure 2 (Above, left) Part of the root of an upper second deciduous molar. A large vessel passes into the root canal from the bifurcation region. The venous drainage of this root canal is mainly toward the bifurcation region

Figure 3 (Left) Buccal root of an upper first permanent molar. Six groups of vessels connect the root canal with the periodontal membrane. In the coronal half of the root canal the peripheral capillary plexus is present only on the outer aspect

In adult teeth often it is noticeable that the odontoblast layer also is present on only one side of the canal, usually the outer side. The absence of odontoblasts and the absence of the peripheral capillary plexus coincide.

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Studies on the permeability of tooth roots to penicillin

I. Curson and F. L. Jackson. *Proc. Roy. Soc. Med.* 53:471-473 June 1960

To reinvestigate the permeability of the hard dental tissues to penicillin, a new technic was devised, designed to keep the sealed apical and coronal apertures out of direct contact with the medium containing the test organism.

Teeth were fixed vertically through a central hole in disks of 1/16 inch thick Perspex, 3 inches in diameter. Each disk was converted to a shallow dish by fixing cellulose tape around the edge. Melted nutrient agar, at 44°C., containing *Sarcina lutea* as the test organism, was poured into the dish to a depth of 1/4 inch. Any selected segment of the tooth could be so arranged as to be in contact with the medium.

Freshly extracted single rooted teeth were placed in normal saline. The apical third of the root was sawed off under water, an opening was made into the pulp chamber through the crown, pulp tissue remnants were removed with a barbed broach, and the canal was reamed and irrigated with saline. Araldite, an epoxy resin, was used for sealing at the apex and at the tooth-Perspex junction.

The teeth were selected after careful examination and were kept moist. The teeth were sealed, except for the coronal aperture, into which a cotton wick was wedged with a paper point. The other end of the thread trailed in water. The teeth were kept in a Perspex box with a lid, so that the teeth were continually moist and in a humid atmosphere while the Araldite seal set.

The wicks then were discarded and a paper point was soaked in a 1/25 ml. solution of 8,000 units of penicillin. The paper point was introduced into the canal and the coronal aperture was sealed with wax. The medium containing the test organism was poured, and the specimens were incubated in a humid atmosphere for 18 hours at 32°C. The dishes then were examined for zones of inhibition.

After the results had been recorded, methyl violet stain was introduced into the canal to test the apical seal and to demonstrate the possible route for the escape of penicillin, where this had occurred. All apical seals were found to be satisfactory.

In a pilot survey of eight teeth, six showed zones of inhibition. The zones varied in diameter from a few millimeters to more than 4 cm., and varied greatly in shape. The findings suggested that penicillin could escape from some of the teeth, and that in some instances one aspect of the tooth was more permeable to penicillin than another.

Twelve more teeth were examined to try to determine the possible routes for the escape of penicillin. The dye test, in addition to showing that the seals were intact, revealed the following faults on the root surfaces: (1) cementum defects, associated with inhibition zones; (2) a fine crazing of the cementum surface, which did not permit passage of penicillin or of dye, and (3) discrete spots related in position to the zone of maximum inhibition; a study of sections confirmed the impression that these spots were the openings of lateral canals.

The findings show that cementum which is intact is not permeable to penicillin. It is clear, however, that some tooth roots may have faulty cementum. If a tooth has one or more lateral canals, penicillin can reach the surface of the root. The demonstration of lateral root canals by the use of methyl violet stain is particularly simple and effective.

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Public health
dentistry**Relation between caries incidence
and salivary lactobacillus count
in school children**

Hertha Hafer. *Deut.zahnärztl.Zschr.*
15:897-903 June 15, 1960

In 102 children (56 boys and 46 girls) between 11 and 12 years old, the lactobacillus content of unstimulated saliva was individually determined. The 102 children attended different elementary schools in the city of Ludwigshafen, Rhineland, Germany.

According to the lactobacillus count established in 1 ml. of saliva, four groups were formed as follows: (1) from 0 to 1,000 lactobacilli; (2) from 1,000 to 10,000; (3) from 10,000 to 100,000, and (4) more than 100,000 lactobacilli.

The study was mainly concerned in establishing whether a relationship exists between the individual lactobacillus content in saliva and an individual resistance or susceptibility to caries.

The results were as follows:

1. The children of the first group showed an average of 0.18 new cavities during two years of observation.
2. The children of the second group had an average of 2.43 new cavities.
3. The children of the third group had an average of 2.60 new cavities.
4. The children of the fourth group had an average of 2.60 new cavities during the two years of observation.

The tooth surfaces of the children with a higher lactobacillus count in the saliva exhibited changes indicating the presence of an acid production sufficiently high to permit the judging of these teeth as caries susceptible.

Although the number of children used in this study was too small to demonstrate that a direct relation between the salivary lactobacillus count and an individual susceptibility or resistance to

caries existed, the established differences in the incidence of caries between the four groups indicated the strong possibility of such a relationship demonstrable by the number of new cavities.

The children with a low lactobacillus count and a high buffering power were almost immune to caries whereas in those with a high lactobacillus count and a limited buffering power, a rampant form of caries could be determined.

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School dental care in Bulgaria

T. Sipkovska. *Abstr.Bulgarian Sci.Lit.*
3:110-111 April-June 1960

The results of the nationwide school dental service in Bulgaria, initiated in 1954, were analyzed and statistically evaluated at the Dental School of the University of Sofia.

During this five year period, all Bulgarian school children had undergone dental and oral examinations at least twice annually at the school dental clinics, and all urgently needed dental procedures were carried out by school dentists. At the beginning of 1960, the percentage of children in need of treatment had decreased from 85 per cent to 60 per cent. The percentage of children with carious lesions of the permanent teeth decreased from 40 per cent to 24 per cent. The incidence of caries in the permanent teeth of children who had previously undergone dental treatment at the school dental clinics decreased by 72.5 per cent. The ratio between permanent teeth which, after treatment, were still healthy with vital pulps and permanent teeth which had been devitalized was 24:1.

Clinical studies indicated that in a group of school children treated twice yearly by topical application of stannous fluoride, the incidence of new carious lesions was reduced by about 40 per cent, whereas in the group of children not treated topically with stannous fluoride, the incidence of new carious lesions increased by 52.6 per cent. In both groups, only the incidence of caries in the teeth which were caries free at the time of the topical application was evaluated. The findings relative to the effectiveness of topical application of stannous fluoride were so conclusive that

the Bulgarian Public Health Authorities decided that in 1961 topical application of either sodium or stannous fluorides should be initiated at the school dental clinics on a compulsory basis.

Dental School, Chervenko Higher Institute of Medicine, University of Sofia, Sofia, Bulgaria

Effects of three trace elements on dental caries experimentally produced in Syrian golden hamsters

K. Lutomska and J. Pawlak.
Schweiz. Mschr. Zahnhk. 70:44-52
Jan. 1960 [in French]

The effects of three trace elements—fluorine, molybdenum and vanadium—on dental caries experimentally produced in 57 Syrian golden hamsters were investigated at the Dental Institute of the University of Gdansk, Poland.

The 57 hamsters (38 female and 19 male adults) were divided into six experimental groups (each consisting of 8 animals) and one control group (9 animals).

All animals were fed the highly cariogenic Keyes diet.

In Group 1, four animals received 0.04 mg. molybdenum (at pH 8.9) per each 100 ml. of their drinking water; the same amount of molybdenum was injected into the other four animals.

In Group 2, four animals received 0.08 mg. vanadium (at pH 7.1) per each 100 ml. of their drinking water; the same amount of vanadium was injected into the other four animals.

In Group 3, four animals received 0.08 mg. fluorine (at pH 8.5) per each 100 ml. of drinking water; the same amount of fluorine was injected into the other four animals.

In Group 4, four animals received a mixture of molybdenum and fluorine (at pH 8.1) in their drinking water, and the same mixture was injected into the other four animals.

In Group 5, four animals received a mixture of vanadium and fluorine (at pH 7.6) in their drinking water, and the same mixture was injected in the other four animals.

In Group 6, four animals received a mixture of molybdenum, vanadium and fluorine (at pH 8.5) in their drinking water, and the same mixture was injected into the other four animals.

The control group received no trace elements.

Statistical evaluation of the caries incidence in the various groups led to the following conclusions:

1. The administration of either of the three trace elements obtained after three months almost an identical reduction in the incidence of caries. There were 91 carious teeth (of 108) in the control group; 5 carious teeth (of 96) in Group 1; 7 carious teeth (of 96) in Group 2; 8 carious teeth (of 96) in Group 3; 6 carious teeth (of 96) in Group 4; 7 carious teeth (of 96) in Group 5; and 11 carious teeth (of 96) in Group 6.

2. The administration of the trace elements did not affect the bleeding time or the coagulation time.

3. The administration of the trace elements did not change the ratio of hemoglobin, erythrocytes, leukocytes or lymphocytes in the blood.

4. After administration of double compound trace elements (Group 4 and 5), the erythropoiesis was significantly increased.

5. The administration of trace element mixtures produced histopathologic changes in the liver and the kidneys.

The Keyes diet contained 3,500 calories and was especially rich in sucrose, dextrose and carbohydrates (rice, oatmeal and potatoes).

Kliniki Stomatologicznej w Uniwersytecie, Gdansk, Poland

Riboflavin avitaminosis in North Korea

I. Tolew. *Abstr. Bulgarian Sci. Lit.* 3:86
April-June 1960

From 1954 to 1959, a team of Bulgarian dentists and physicians examined school children in the North Korean People's Republic. Riboflavin avitaminosis was found in 36.3 per cent of the children.

The oral manifestations of this vitamin deficiency were as follows: (1) profound paleness of the lips; (2) bilateral, horizontal angular cheilosis; (3) purple tongue; (4) desquamation and inflammation of the vermillion borders; (5) reddened, encrusted areas on the oral mucosa; (6) tendency to hemorrhage and trauma; (7) increase in the incidence of periodontitis, gingivitis and stomatitis; (8) enlarged and edematous fun-

giform papillae; (9) granular appearance of the upper surface of the tongue, and (10) shallow ulcerative lesions on the oral mucosa and the facial skin.

Although oral manifestations of riboflavin avitaminosis may indicate the lack of a single vitamin, the causes of nutritional deficiencies usually are multiple. The high incidence of the disease in the North Korean children may be explained by the inadequate dietary intake, resulting from the socioeconomic conditions developing during and after the Korean conflict.

Blood analysis revealed that riboflavin avitaminosis was associated with normocytic anemia in 55 per cent, hyperchromic anemia in 29 per cent, and hypochromic anemia in 16 per cent. Ocular manifestations of the disease were observed in almost 90 per cent.

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Incidence of prognathism in Bulgaria

S. Davidov, N. Geševa, T. Dončeva and L. Dekova. *Abstr. Bulgarian Sci. Lit.* 3:109 April-June 1960

During 1959, 3,550 patients with irregularities of the teeth or jaws and malocclusion were observed or treated at the Orthodontic Clinic of the Dental School of the University of Sofia, Bulgaria. Of those 3,550 patients, 345 (almost 10 per cent) had projecting jaws. Examinations with the prognathometer revealed the presence of an average prognathic index of 105.

Statistical evaluation of the clinical data revealed that this defect involved almost equally the boys (50.75 per cent) and the girls (49.25 per cent). These 345 children with projecting jaws showed true prognathism in 54.23 per cent and pseudoprognathism in 45.77 per cent.

In the children with a family history indicating a possible hereditary predisposition to projecting jaws, prognathism occurred almost twice as often as pseudoprognathism. In the first group (true prognathism), the defect could be detected even in the period of the deciduous dentition.

Among the possible etiologic factors, difficult nose breathing (31.85 per cent) ranks first, followed by congenital anatomic defects (28.35 per

cent) and disturbance of normal ossification (rickets) or avitaminosis (together, 5.97 per cent).

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Oral hygiene and nutrition: survey of oral health conditions and breakfast contents of Westphalian school children

Wolfgang Wallentin. *Zahnärztl. Mitt.* 48/5:667-668 Aug. 1, 1960

During the period from April to June 1959, questionnaires were sent to 1,012 children attending ten public schools in the urban districts and five public schools in the rural districts of the Iserlohn region of Westphalia, Germany. Almost 100 per cent of the questionnaires were returned, most of them truthfully filled out.

The type of information obtained was needed by the Public Health Department of the Westphalian government not only to evaluate the current oral hygiene and nutritional conditions but to design programs on dental health for school children, their parents and teachers.

The children responding to the questions can be regarded as a satisfactory cross-section of the Westphalian child population, including those of lower, middle and higher income families.

The questions asked and the answers received were as follows:

1. Do you own a toothbrush? Yes, 926 (91.5 per cent). No, 86 (8.5 per cent).
2. Does every member of your family have his (or her) own toothbrush? Yes, 829 (82 per cent). No, 182 (18 per cent).
3. Do you clean your teeth with a toothbrush owned by another member of your family? Yes, 65 (6.4 per cent). No, 946 (93.6 per cent).
4. How often and at which time do you brush your teeth? Once daily, in the morning? 211 (21.3 per cent). Once daily, in the evening? 141 (14.2 per cent). Twice daily or after each meal? 287 (28.9 per cent). Occasionally, but less than once daily? 313 (31.5 per cent). Never? 41 (4.1 per cent).
5. Do you use a tooth paste? Yes, 944 (94.9 per cent). No, 51 (5.1 per cent).

6. What did you eat at breakfast time? Dark rye bread? 44 (4.4 per cent). Mixed (wheat and rye) bread? 571, (57.3 per cent). Hard rolls? 127 (12.7 per cent). Unsweetened wheat bread? 117 (11.7 per cent). Sweetened white bread? 49 (4.9 per cent). Cake? 22 (2.2 per cent). Candy or other sweets? 7 (0.7 per cent). Nothing? 61 (6.1 per cent).

7. What did you drink at breakfast time? Milk? 203 (20.2 per cent). Cocoa or chocolate? 555 (55.2 per cent). Nothing? 248 (24.6 per cent).

There were scarcely any statistically significant differences between children residing in urban or rural districts, between the sexes and between the age groups (from nine to ten years old).

The results of the survey revealed the following facts which were not expected to exist in a highly civilized population: (1) the understanding of the need for both an adequate oral hygiene and a proper use of the toothbrush is lacking; (2) the comprehension of the values of a healthy nutrition appears to be unsatisfactory, at least, concerning the breakfast; (3) the inadequacy in oral hygiene and nutrition does not seem to be associated with the individual economic condition (there were no statistically significant differences between the lower, middle and higher income groups), and (4) the need for immediate and forceful education on oral hygiene and healthy nutrition is urgent.

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Some historical reflections on dental research: A comparison of the septic and proteolysis-chelation theories of caries

Albert Schatz and Joseph J. Martin. *J.D.Med.*
15:127-133 July 1960

According to the classical acid theory, dental caries is caused by demineralization due to the hydrogen ions of fermentation acids, mostly lactic acid. According to the proteolysis-chelation theory, dental caries may result not because lactobacilli or other acidogens cause tooth decay, but because they fail to prevent it. "Indeed, it may yet turn out that acid is one of nature's preventive factors militating against tooth decay." There are

gross differences between the two theories as regards the origin, nature and mode of action of the decalcifying agents.

The acid theory of dental caries has been an unchanging concept for almost a century. It has failed to contribute positive, practical results. This static situation in caries research has occurred when science generally has made notable advances in other fields.

The one piece of knowledge which did not exist in 1881, and which made it impossible for Underwood and Milles, Miller or others to have formulated even a primitive proteolysis-chelation theory, was the fact that organic matter exists within the enamel. This information was provided by Bodecker in 1905. If Underwood and Milles had designated as decalcifying agents the degradation products of organic components in dentin instead of secreted acids per se, and if they had consulted with contemporary chemists, they might have envisioned demineralization mediated by the formation of soluble calcium-ammonia complexes. Such an idea might then have evolved into a proteolysis-chelation theory concerned not with caries initiation in enamel but with the way dentin could be destroyed.

In the twentieth century, advances in scientific knowledge as well as the failure of the acid theory to provide a solution to the caries problem compelled dental research to envision horizons beyond the narrowly restricted area so rigidly defined by Miller's acid theory. In the twentieth century, formulation of the proteolysis-chelation mechanism and realization of its applicability of the caries process became both possible and inevitable.

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The Tennessee dental extern program

Carl L. Sebelius. *Pub. Health Den.* 20:3-6
Summer 1960

Since 1953 when the dental extern program of Tennessee was initiated, 48 dental school graduates have served a two and one half month dental externship with the Tennessee Department of Public Health. In 1953 there were two dental externs; nine in each 1954 and 1955; eight in 1956; four in 1957; seven in 1958; eight in 1959, and one in the first part of 1960.

The Tennessee Dental Practice Act was changed in 1953 to permit the department to use recent graduates prior to their taking of state board dental examinations.

The major aims of the extern program are: (1) to give a general orientation in public health, (2) to give an introduction to community planning with emphasis on dental health, (3) to give each individual an opportunity to participate in dental clinic programs, (4) to introduce each extern to the dental education program, and (5) to acquaint each extern with material used in public education programs.

The externs work with the regional dental officers in promoting dental public health at the state and local level. They become familiar with scientific measures to prevent dental disease. They become acquainted with the dental needs of people in the various local communities. They work in dental clinics in several areas of Tennessee. At the termination of the extern period, each participant is asked to prepare a report of what he believes he has gained by having served the externship.

Excerpts from the reports of 11 externs are presented. The extern program has been an excellent recruiting source for public health personnel. Many former externs have become active in civic and community affairs. The program has proved stimulating to the personnel of the Department of Public Health's Division of Dental Health.

Division of Dental Health, Tennessee Department of Public Health, Nashville, Tenn.

When malocclusion concerns the public

Ross O. Fisk. *J. Canad. D.A.* 26:397-412
July 1960

Surveys of the incidence of malocclusion in cross sections of the population reveal that a remarkably high percentage of children are affected to some degree. At present, the treatment of malocclusion consists mainly of palliative or corrective procedures instituted during the terminal stages of development. Such factors as social and economic standards, cultural values, racial characteristics, and the advice of the family dentist all play a part in influencing parents to seek orthodontic service for their children. To obtain a more exact

knowledge of what the public considers malocclusion, the initial dental casts of 1,000 patients for whom orthodontic treatment was sought were examined. The sample comprised patients from one practice, of similar socioeconomic status, living in three separate districts in metropolitan Toronto.

From the dental ages of 3 to 21 years, the percentage of boys with Class I malocclusion seeking orthodontic treatment decreases. A similar trend occurs with girls, except that at the dental age of 12 to 15 years there is a significant increase in the number of girls seeking orthodontic treatment for Class I malocclusion.

A labiolingual spread of the maxillary incisors greater than 3 mm. was present in 54.8 per cent of the boys but in only 43.3 per cent of the girls. It would appear that there are 12.5 per cent more boys than girls with noticeably irregular maxillary teeth.

There were 151 missing teeth. Six per cent of the casts examined showed congenital absence of one or more teeth.

Nineteen per cent of the casts showed non-congenital loss of deciduous or permanent teeth; 23 per cent of the boys and 17 per cent of the girls showed evidence of such mutilations.

There is a suggestive increase in the number of patients with Class II Division 2 malocclusion seeking treatment after the central and lateral incisors have erupted.

Of 22 postnatal defects, the highest percentage of any one factor was 2 per cent of the total.

Twenty per cent of the patients had had therapeutic extractions for orthodontic purposes.

Over-all, 10.7 per cent more boys than girls were treated for Class II Division 1 malocclusion.

A significantly greater number of men than women requested treatment for Class III malocclusion.

Of the 1,000 patients, 10.2 per cent showed anterior cross-bite.

Posterior cross-bite, with the maxillary teeth biting buccally, was exhibited by 11.5 per cent of the patients.

The increased number of 21 year old men with posterior cross-bite in which the maxillary teeth are displaced lingually probably is associated with the higher incidence of Class III malocclusion in men.

As dental age increases there is a decrease in the number of patients with maxillary and mandibular spacing.

Open bite occurred infrequently in this sample. From 3 to 6 years and also at 21 years of age, boys have a higher percentage of open bite than girls.

No correlation was found to exist between overjet and overbite.

In summary, the most frequently occurring attributes were irregular maxillary and mandibular anterior teeth, spacing of the maxillary teeth, and Class II malocclusion. The dental age range of the majority of patients for whom treatment was sought was from 7 to 15 years, with the greatest number occurring at 12 years of age. A greater number of girls than boys sought treatment after the dental age of 10 years.

The frequency of malocclusion according to Angle's classification for this sample was compared to the frequency of malocclusion reported in studies of random samples by other investigators. Although in the studies of random populations, only 26 per cent of malocclusions are of the Class II and Class III types, these major deformities comprise 60 per cent of all treatment anomalies found in this study. Therefore, this study indicates that the most common types of malocclusions for which treatment is sought occur relatively infrequently in random populations. Such a divergence between the need for orthodontic treatment and its demand—the professional and the public concepts of malocclusion—is significant in the establishment of criteria for treatment priority in public health orthodontic programs.

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Caries-reducing effects of tablets containing calcium fluoride in Slovenian school children

Valter Krušič. *Zobozdrav. vest.* 15:27-31
July-Sept. 1960

During the last three years, 168 selected children received dietary calcium fluoride (CaF_2) tablets, administered according to Knappwost (1956). The children, between 8 and 15 years old, were public school pupils in Ljubljana, Yugoslavia.

They were examined periodically at the Dental Clinic of the University of Ljubljana.

Although in most of the children, the crowns of the permanent teeth had developed prior to the experiment, the regular administration of calcium fluoride tablets decreased significantly the incidence of caries.

Before the initiation of the fluorine experiment, the teeth of all children including those of the two control groups (91 and 77 children) had been treated clinically to eliminate all carious lesions.

The decrease in caries incidence in the experimental group ranged from 12.93 to 86.80 per cent. No incidence of dental fluorosis was observed.

Although the results of the study are based on the observations of a limited number of school children and can be, therefore, regarded as inconclusive (presumptive) evidence, the statistically recorded caries-reducing effects of calcium fluoride tablets suggest that in the great majority of the children caries-resistant teeth had developed.

Future epidemiologic studies are planned to demonstrate the influence of various predisposing factors on caries incidence as well as the caries-reducing effects of fluorine added to other vehicles such as drinking water, milk and salt.

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Dental services in the Y.M.C.A.

Neville A. Booth. *Harvard D. Alumni Bul.*
20:109-111 July 1960

A membership in the Young Men's Christian Association can mean many things to a boy—a swimming pool, a gymnasium, a craft program, or a meeting place for the neighborhood club. To the boys of the Huntington Avenue Branch in Boston it also means the facilities of a dental clinic. The clinic has been in operation since 1946, providing a dental health program which is unique in the Y.M.C.A. organization in North America.

The program was formulated when it was realized that over 90 per cent of the boys who were given compulsory medical examinations were found to have dental defects recognizable by

cursory examination. Medical defects were brought to the attention of the parent and corrected through referral to local clinics. The existing dental facilities were investigated but found to be unavailable except on a limited basis. In 1944 the author became interested in the problem. A committee of dentists was formed.

The clinic opened in February 1946, financed by a grant from a local philanthropist and equipped through the courtesy of a local dental supply house. A program of dental health education was started. A complete oral examination was a prerequisite for participation in the physical education program. A report of the dental examination was sent to the parents and an opportunity was made for the parents to visit the clinic for consultation. Oral prophylaxis was given by a staff hygienist. Referrals were made to other clinics and to private practitioners. In recent years a limited amount of restorative treatment has been provided for those boys whose needs were not being met elsewhere.

The staff has consisted of a dental hygienist, a dental supervisor and one or more operators. The clinic is open during after-school hours several days per week. Saturday and summer sessions have been held when the budget permitted. A nominal charge is made for all services except the initial examination.

82 Day Street, Norwood, Mass.

**Stannous fluoride enamel pigmentation—
evidence of caries arrestment**

Joseph C. Muhler. *J.Den.Children*
27:157-161 Sept. 1960

Every dentist has seen the old, brown arrested lesions of dental caries in teeth of elderly persons. In every clinical test using stannous fluoride as a topical anticariogenic agent, the disappearance of carious lesions has been observed consistently. Closer clinical examination of areas which now appear to be sound but which previously had been considered to be lesions of incipient caries, demineralized areas, etchings, or frank carious lesions, shows that all such areas acquire certain typical characteristics, as follows: (1) the presence of pigmentation, (2) the change from a soft to a very hard texture, (3) the change from

chalky whiteness to light brown, (4) no increase in size of the lesion, and (5) no further progress of the lesion as long as the pigmentation remains.

Clinical investigations show that once the precarious or carious area becomes pigmented with the characteristic light brown color, the lesion will fail to increase in size. It is believed that the smaller the size of the lesions at the time of the initial application of stannous fluoride, the greater the chance of caries arrestment.

The frequency of reapplication of topical stannous fluoride may be determined in part by the disappearance of the pigmentation. When the characteristic light brown pigmentation begins to disappear, the lesion will begin to increase in size. Among the factors which affect the duration of pigmentation and the length of caries arrestment are the following:

1. The frequency of reapplication of stannous fluoride. In a patient with rampant caries, the pigmentation usually will begin to disappear after three to four months. In such patients, a reapplication of stannous fluoride is suggested at this time or no later than six months after the former application. In patients where the pigmentation is low, such pigmentation may not begin to disappear for a year or more, and a reapplication is suggested about once a year. Generally, the reapplication should be as frequent as necessary to bring the caries under control.

2. The type of dentifrice used. The light brown pigmentation resulting from stannous fluoride can be removed by toothbrushing alone. The duration of pigmentation can be prolonged through the use of a stannous fluoride dentifrice, which in essence provides the carious enamel with a daily topical application of stannous fluoride, thus increasing the tin content of the carious enamel.

3. Caries susceptibility of the patient. There is evidence to support the observation that the more susceptible to caries the patient, the greater the pigmentation, but also the greater the loss of pigmentation.

The light brown pigmentation discussed is not to be confused with the dark brown to black "stains" which result from poor oral hygiene.

Indiana University Medical Center, Indianapolis 7, Ind.

**Fiftieth anniversary
of the Dental Institute
of the University of Tübingen, Germany**

Eugen Fröhlich. *Deut.Zahnärztebl.* 14:227-230
April 22, 1960

In 1910, the University of Tübingen, one of the oldest centers of higher learning in Germany, added a dental institute to its famous medical school.

Today, the Dental Institute's main objective is to enlarge the horizon of dentistry, and to expand the curriculum by including all sciences basic to the practice of dentistry.

The history of the Institute is closely associated with the history of the University of Tübingen which was founded in 1477 by Karl Eberhard, Duke of Württemberg. The celebrated Lutheran reformer, Philipp Melanchthon (1497-1560), studied and lectured at the University from 1514 to 1518.

At present, the Dental Institute is housed in an ancient ducal palace which was erected in 1507. The picturesque palace stands on a hill overlooking the old town and the Neckar river. It is spacious enough to permit classroom and clinical teaching, as well as laboratory and research work, for about 200 students.

Undergraduate and graduate courses in all fields of dentistry and postgraduate ("refresher") courses are well attended.

The dental clinic and polyclinic give the student practical experience and knowledge of roentgenographic, laboratory and research procedures essential for diagnosis and treatment of dental and oral diseases occurring in the population of Tübingen (44,264) and other cities of the State Baden-Württemberg, especially in preschool and school children.

The first dean of the Dental Institute was Hermann Peckert who headed the faculty from

1909 to 1936. Peckert taught many dental subjects, especially operative dentistry, and his textbook *Introduction to Conservative Dentistry (Einführung in die konservierende Zahnheilkunde)*, published in 1911 and re-issued in 1923, is still regarded as a standard work. Among his many pupils were Wolfgang Präger and Eugen Wannenmacher who later became his co-workers and prominent dental educators. Präger, known for his studies on the etiology of dental caries, lost his dental practice and his position at the Institute by a government order issued by Hitler's Ministry of Education. Wannenmacher, who taught prosthetic dentistry and orthodontics at the Institute from 1925 to 1935, is now the dean of the Dental School of the University of Munster.

Peckert's successor was Ferdinand Wasmuth, who headed the Institute from 1937 to 1940.

During World War II, Walter Adrión became the dean of the Institute. He was especially active in the treatment of soldiers with maxillofacial wounds.

Hans Hermann Rebel was dean after Adrión. He enlarged the faculty to 16 professors and 2 associate professors.

Since April 1, 1958, the author has served as the dean of the Institute and head of its clinic, polyclinic and hospital.

At present, only 220 students attend dental courses at the Institute. The erection of a new school building is planned. It will provide additional accommodations and will permit an appropriate increase in the number of dental educators, dental researchers and dental students.

Clinikumsgasse 12, Tübingen, Germany



Why not a Department of Social Dentistry?

Philip E. Blackerby. *J.D.Educ.* 24:197-200
Sept. 1960

The opinion is widely held that dentists generally are relatively lacking in social consciousness and that this attitude may be traced to a weakness in their professional education and to the professional isolation that characterizes the dental practitioner. In a 1954 survey of 30 dental schools, it was reported that an average of 22 hours was devoted to instruction in "public health" (general and dental). Other subjects of social import—ethics, jurisprudence, history, social and economic relations, dental economics, epidemiology, psychology and behavioral science, gerontology, civil defense, hospital relations, chronic disease and rehabilitation, and so forth—receive similarly scant attention in the curriculum.

It is proposed that a Department of Social Dentistry be established by the dental schools for two purposes: (1) to assume primary responsibility for curriculum development, teaching, and research in those areas of dental education which contribute most directly to the social maturation and evolving professional philosophy of the student, and (2) to coordinate these areas throughout the total program of dental education in order that the efforts of all departments may be joined for the basic objective of producing graduates who are well-rounded, socially motivated and professionally competent citizens.

With a Department of Social Dentistry, the subjects of social import will be more likely to receive the attention and coverage they deserve, through deliberate and careful planning rather than on a hit-or-miss basis as the convenience of personnel and schedules may dictate. With proper reorganization under a strong new Department of Social Dentistry, these subjects could be taught far more effectively than at present even within existing time limitations.

In addition to direct teaching functions through lectures, seminars and some laboratory instruction, the Department of Social Dentistry would be responsible for the planning and supervision of essential field experience for the students in such areas as public health, epidemiology, chronic disease and rehabilitation, hospital relations and

community organization. Equally important would be the coordinating and research functions implied in the stated objectives of the department.

Subjects of social import now are under-emphasized and often taught in a disorganized and relatively ineffectual manner.

A logical choice for the chairman of a Department of Social Dentistry would be a competent dentist with graduate education and broad experience in public health administration, plus experience in teaching and research.

W. K. Kellogg Foundation, Battle Creek, Mich.

A demonstration program for the teaching of comprehensive dentistry

Regina Flesch. *J.Am.Col.Den.* 27:166-172
Sept. 1960

Comprehensive dental care implies an interest in the patient's total health and well-being, which includes knowledge and utilization of other health and welfare resources in the community. The dental student who now takes into account the patient's medical health history should be taught to become informed about the dental health history as well. He needs this information to understand the total patient. Dental clinic patients should not be viewed as socially isolated, as is now commonly the case, but as part of a family and the community. Every clinic patient should be approached with the idea of giving attention not only to his immediate dental needs, but to those social, economic, cultural and emotional elements in his situation which impinge on planning for, and attitudes toward, dental care.

No amount of specific instruction in patient management technic will make up for the lack of understanding of the aims afore-mentioned; indeed this is precisely the deficiency in practice management technic; insufficient attention has been paid to the interrelationship between dental problems and common human problems.

The University of Pennsylvania School of Dentistry has taken steps to bring these concepts within daily reach of its dental students, and to provide them with a perspective beyond traditional dental education. The school has introduced the following additions to the customary

dental educational program: (1) consultation with students on individual clinic patients, with specific reference to social, economic, emotional and cultural factors bearing on the patient's dental care; (2) interviews with clinic patients, conducted by a consultant social scientist in the presence of the dental student; (3) clinical conferences for third and fourth year students on patients presenting social and economic obstacles to dental treatment; (4) instruction in the utilization of community resources for the clinic patient's health, social and economic welfare; (5) extramural conferences on dental clinic patients, conducted, for instance, with medical and psychiatric centers in the community; (6) home visiting, so that the dental student can become familiar with the community to which his patient belongs, and with the kind of background and home care associated with the patient's oral health, and (7) cooperation with the Philadelphia Health and Welfare Council.

This demonstration program follows a plan already familiar to other professional schools, such as medical schools, law schools, theological seminaries and schools of business administration. It appears that dentistry alone of the professions remains largely outside this main stream of development in professional education. Although dentistry has taken advantage of the many recent developments in the medical, biological and physical sciences, it has lagged noticeably in its use of the social sciences.

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The training school for dental auxiliaries

J. V. Bingay. *Brit.D.J.* 109:178-180
Sept. 6, 1960

As part of an experimental program for training and employing dental auxiliaries, a School for Dental Auxiliaries is scheduled to open October 3, 1960, at New Cross London. The school was set up by the General Dental Council. Graduates will be permitted to fill teeth and extract deciduous teeth in the dental services of hospitals and local authority health and school dental

services. The object of the experiment is to discover the value of dental auxiliaries to the community. It is expected to be four or five years before sufficient information has been acquired for the results to be judged.

The school is situated in the grounds of New Cross General Hospital. On the ground floor will be a clinic with 31 individual surgeries. On the next floor will be a school for 120 students and administration offices.

During the first year of the two-year course, students will spend about 400 hours on lectures and demonstrations, and about 800 hours in tooth carving, practical instruction on the phantom head, and so forth. During the second year the student will proceed to clinical work on patients, under supervision of the dental surgeons on the staff, and always subject to the limitations imposed on the scope of her training; in this second year the student will spend about 450 hours on lectures, practical demonstrations and conferences with tutors, and about 650 hours on clinical practice. Patients will be drawn mainly from London County Council schools in the area; in addition, mothers with children of preschool age will be encouraged to bring them to the clinic for treatment.

During the first year the teaching staff will consist of the director (the author), and three other dentists who will be assisted by three tutors trained in New Zealand under the school dental nurses scheme.

As a result of advertisements and publicity, an overwhelming response was received to the invitation to apply for the 60 places available in the first year. Over 3,000 inquiries were received; after interviews and aptitude tests, 60 students were selected for the first course; the students come from all parts of the United Kingdom. Students must be not less than 17 years old, and should normally have obtained the General Certificate of Education or its equivalent.

This program is an experiment which the dental profession through the General Dental Council is required to carry out. All concerned have to keep an open mind and not prejudge the results.

School for Dental Auxiliaries, London S.E.14, England

General

**Communicative mandible-snapping
in Acrididae (Orthoptera)**

Richard D. Alexander. *Science* 132:152-153
July 15, 1960

Communicative mandible snapping relates only to certain species of short-horned grasshoppers. One, of course, can think of other species at the higher end of the biological kingdom that also engage in "communicative mandible snapping." However, these people use their larynx and a host of other accessories besides the mandible. Thus, so far as is known, only among the short-horned grasshoppers do ". . . sounds made by movements of empty mandibles operate as intra-specific communicative signals." The insects produce the ticklike sounds by snapping the mandible in response to an imitation click made by tapping a metal thermometer case on a brass belt buckle. Both adult sexes produced the mandibular ticks and the males during combat and courtship functions. "The mandibles of *Paratylotropidia brunneri* show no special modification indicative of a role in sound production."

*Museum of Zoology, University of Michigan,
Ann Arbor, Mich.*

Bruxism and chronic headache

Ragnar Berlin and Leopold Dessner. *Lancet*
No. 7145:289-291 Aug. 6, 1960

Bruxism is most common during sleep but may be noticed during the day when the patient is concentrating on some trying work, particularly when he is upset or irritated. The hypertonic state of the muscles when the jaws are pressed together, either consciously or unconsciously, soon produces a progressive ischemia, with impairment of oxygenation and accumulation of metabolic products. As a result, the sensory nerve

endings are gradually stimulated, causing pain. In addition, the hypertonic muscles pull on the tendons and supporting tissues. All these factors may contribute to the pain which arises in the spastic muscles of the stomatognathic system and is felt as headache.

Bruxism implies long-standing isometric muscle activity leading to a spastic condition within the masticatory muscles. Local factors causing bruxism include various disturbances in occlusion, such as interceptive occlusal contacts, interferences in gliding movements, and closed bites. To elicit bruxism, some additional factor is necessary, and this would seem to be psychic. Bruxism is most common in people who are under emotional tension.

For diagnosis, the case history is extremely important. The patient usually wakes up with a headache and often he will admit to experiencing tenderness in the teeth or the masseter and temporal muscles. With the patient's teeth in tight occlusion, often it is possible to palpate hypertrophic and tender masticatory muscles, and often there is tenderness along the zygomatic arch. The lower jaw cannot be relaxed to the normal extent, and the freeway space is reduced to 0 to 1.0 mm. Usually, one can find atypical attrition facets on the teeth, particularly on the cuspids and bicuspids.

The diagnosis of bruxism was made in 62 patients, of whom 51 were women and 11 were men. The aim of treatment is to break the vicious circle by making it impossible for the patient to clench his teeth. This can be done with a "relaxation" appliance designed by Dessner (1959). The purpose is to open the bite anteriorly by inserting a bite plane between the upper and lower incisors, thus increasing the intermaxillary space. The appliance is made of acrylic resin and is worn on the upper jaw. It is retained by a pair of simple clasps. The appliance is intended to be worn during the night and, when indicated, during the day also. It is worn regularly for at least six months, that is, for at least four to five months after the disappearance of the headache, which usually takes place within four to six weeks.

Of 62 patients for whom appliances were prescribed, 42 (68 per cent) were completely cured in one or two months; 12 (19 per cent) were considerably improved; 6 (10 per cent) were

only slightly improved, and 2 (3 per cent) were not improved. Thus the treatment was successful in 87 per cent of the patients. A follow-up study showed that the results remained essentially unchanged for up to three and a half years.

Central County Hospital, Falköping, Sweden

How much English does a dentist need?

John Weston Howard. *Col.Composition and Communic.* 11:2:71-74 May 1960

Although at first thought the dentist's concern with English is slight, second thoughts reveal its importance at every stage in the dentist's career.

A good grade in freshman English, as in every other course, helps the student to take the first step toward dentistry. Once he has been accepted as a dental student, he is not finished with the English language. For the next four years he must speak out in quiz session after listening to lectures. He must read a large number of textbooks. At the end of a course (in which he may have written a paper), he must pass a written examination.

When he is not reading his textbooks, working in a laboratory, or seeing patients, the dental student is listening to lectures. In four years of dental school, the student spends one whole year just listening during lecture hours.

In 1957, 33 of 45 dental schools had varying kinds of instruction in dental journalism (Kutscher and Dummett, 1957). At the School of Dentistry, West Virginia University, the student writes one or more extended papers each year. In the last year, a senior thesis is required.

In order to become a dental student, in order to stay a dental student, and in order to graduate, the student will find that all the ways in which language may be put to use are essential. Once the dental student graduates and enters practice, his concern with the use of language is intensified. Both in the office and out, he uses language constantly. With patients of different ages, varying backgrounds and divergent intelligence, the dentist's use of language must be flexible enough to meet the recurring problems of advice, consultation and explanation.

Outside the office, the dentist is called on with increasing frequency to discuss matters of dental

health before citizens' meetings. For the good of the profession as well as his own, the dentist must make a satisfactory public appearance. A dentist should not appear uninformed or, by the use of solecisms, uneducated.

If the dentist is not to become hopelessly outdated, he must keep up with the deluge of new information relating to his profession. He also must be able to communicate with other dentists. Although the dentist may or may not achieve publication in any of the dental journals, the incentive and opportunity to publish are great. To achieve publication, the dentist must get his thoughts down on paper in an acceptable fashion.

The scientific manuscripts committee of the American Association of Dental Editors, after a survey of editorial procedures and practices in 1958, reported that 41 per cent of manuscripts submitted to dental journals were rejected because of poor writing.

How much English does a dentist need? All that he can get in school, and then a lifetime more.

School of Dentistry, West Virginia University, Morgantown, W.Va.

Indispensable plaster

H. S. Maidens. *Brit.D.Surg.Asst.* 18:183-185 June 1960

Gypsum, one of the soft minerals deposited in the earth's crust when the waters receded from the land, is found in all parts of the world. In Britain, the principal source of gypsum is the Trent valley region, mainly in Staffordshire.

In ancient times gypsum was called alabaster. The alabaster, or gypsum, mined in Britain varies in color; it may be cream with delicate veins of green, rose-pink, red, or it may have a translucent white appearance, with veins. Massive gypsum is hewn in blocks which average in weight from 1 to 16 tons. The blocks are hauled to the mine surface by machinery, and cut into small sections from which various ornamental items are produced.

Plaster (in Old English, "plaister") is gypsum that has been pulverized and calcined, or burned in a kiln. This process removes the water content from gypsum. To make plaster for a mold or for building purposes, the chemical process is re-

versed; water is mixed with powdered plaster to make a paste. Allowed to set, it resumes its solid state.

Plaster often is referred to as plaster of paris, because at one time it was prepared for sculptors in the artists' quarter from gypsum found around Montmartre, Paris. The term remains, and frequently is applied to any species of gypsum.

Plaster can be molded, shaped and modeled. The art of plastering is one of the most ancient handicrafts in building operations. The pyramids in Egypt contain plaster work done at least 4,000 years ago.

Dentures are molded in plaster. There is no substitute for plaster, and without it, acrylic denture materials could not be processed into the form of dentures.

Although the total amount of plaster used annually for dental purposes is relatively infinitesimal compared to that used in the building trade, requirements for dental plaster have been specified. "Dental Laboratory Plaster must be high quality, white in colour, dry, uniform and free from lumps and undesirable foreign matter." Particle size, setting time, linear expansion, comparative strength, and so forth, must all come within the limits set down in the specifications. Because of its weight and bulk, plaster for dental purposes requires special facilities in factory production, and protecting packaging against hazards of transit and storage.

2 Sumner Street, Leyland, Lancashire, England

The management of disorders of the temporomandibular joint

Laszlo Schwartz. *J. Canad. D.A.*
26:548-551 Sept. 1960

Ten years ago the author began research on disorders of the temporomandibular joint, because of misgivings regarding the basis for current methods of treatment. Tabulation of the symptoms of 250 patients revealed that in 90 per cent the chief complaint was facial or head pain, described as a constant, dull headache, aggravated by mandibular movements. Another 10 per cent of patients described as their chief symptom some type of mandibular dysfunction—clicking,

subluxation (usually described as the jaw slipping momentarily), actual dislocation or limitation. Instead of the multiplicity of symptoms and the simplicity of treatment described by Costen in 1934, the author found relative simplicity of symptoms: pain and dysfunction. It was concluded that disorders of the temporomandibular joint constituted a simple pain-dysfunction syndrome.

Investigation led to the conclusion that these symptoms could be explained on the basis of painful impulses arising from the muscles and tendons. Such impulses would cause spasm, which in turn was painful, and thus was set off a self-perpetuating cycle of pain and spasm. In many patients, painful regions were present in the musculature such as are found in other parts of the body. It was also established that, by the application of anesthetics, (either in the form of a surface anesthetic such as ethyl chloride spray or procaine given intramuscularly) many patients were able to stretch their muscles, with a resulting resumption of function. In many patients, where pain was not too great, exercise alone seemed to break up the cycle and restore normal function.

With further study, covering 1,500 patients, half of whom were seen at a temporomandibular joint clinic and half seen in private practice, the mechanism became clearer.

Goldensohn has pointed out that in some patients with disorders of the temporomandibular joint, particularly those under tension, there is increased motor unit activity. It appears that the syndrome described may be precipitated in patients with this kind of increased tension of the musculature. Most of the patients with limitation of jaw movement experienced the onset of the symptom on awakening, taking a wide bite, after a long dental appointment or difficult extraction, or sometimes after some minor change in proprioception resulting from restorative dentistry.

All dentists have had the experience of seeing patients made unhappy by relatively minor restorative procedures. Such reactions can be minimized in three ways: (1) by taking a complete history, (2) by broadening the scope of the clinical examination to include observation of the range and character of mandibular and con-

dylar movements, and the size, state and presence or absence of painful regions in the musculature, and (3) by modifying one's attitude toward the problem of occlusion.

The purpose of an occlusion is function for the patient. The dentist must be on guard against interfering with occlusion, especially in patients who, on the basis of history and physical examination, appear to adapt poorly to changes in proprioception.

In the management of temporomandibular joint disorders, an accurate diagnosis is the first prerequisite. Organic disease affecting the joint is rare, but it may occur occasionally and must be excluded by differential diagnosis. In diagnosis there are two dangers: to see a disorder where one does not exist, and not to recognize a disorder that exists. Patience is required of the dentist, and the ability to resist the desire for dramatic results. Also required is an understanding of the basic principles of therapy of other specialties in medicine, particularly physical medicine and psychiatry.

2 East Fifty-fourth Street, New York, N. Y.

Procedure for collection of dental fees

Elna Birath. *Monde dent.* 11:34-37 Sept. 1960

A planned procedure for the collection of dental fees has been found effective by numerous dental practitioners. It consists of the following steps:

1. The dentist must be sure that the patient understands the agreement terms.
2. The dentist should explain the need for and the type of the service he plans to render the patient.
3. The dentist should keep a complete record of the terms of the financial arrangement agreed to by the patient.
4. The dentist should determine the time most convenient for the patient to make payments. These dates should be scheduled accordingly, and the patient should be informed that payments are expected on the due date.
5. The dentist should not allow the due date to be passed for more than five days without contacting the patient to learn the cause of delay.

6. The dentist should record the extension if he agrees that the due date is extended for a legitimate reason. He should not permit due payments to lapse without reminding the patient.

7. The patient should be approached with courtesy and tact if the payment is not received at the due date. Initially, the dentist should always assume that the delay in payment has been caused by either oversight or some unavoidable circumstance.

8. The dentist should always inform the patient whenever it becomes necessary to change the original plan of professional treatment.

9. The dentist must give more than ordinary consideration to complaints presented by the patient. Every possible rectification should be made if the complaints are justifiable.

Dental Branch, University of Texas, 6516 John Freeman Avenue, Houston, Texas

The dentist's productive power: his optimal capacity

Rudolf Schöbel. *Zahnärztl. Praxis* 11:193-194 Sept. 1, 1960

The term "productive power" has been regarded as a purely physical concept used to estimate how much work can be done under a fixed condition during a given time period. In industry, this principle is being applied successfully to determine the output of a laborer (or machine) in specific weight and time units (for instance, in kilograms per seconds).

Productive power, however, is also a physiologic and psychologic concept, especially applicable to measure the efficiency and productivity of a professional man. In dentists and in physicians, the productive power is continuously influenced by various endogenous and exogenous factors which determine whether the individual performs his daily work at minimum, optimal or maximum capacity. These endogenous factors are as follows: (1) ability to perform satisfactorily under adverse circumstances; (2) physical and mental characteristics; (3) bodily strength and endurance; (4) aging process; (5) internal disease; (6) disturbances in hormone metabolism or acid-alkaline equilibrium; (7) intellect, emo-

tions and impulses, and (8) favorable disposition for the chosen profession. The exogenous factors are as follows: (1) climate; (2) temperature variations; (3) meteorologic changes; (4) environmental conditions at the home and at the office.

In dentists, productive power is difficult to determine because of the many variables associated with the dental practice. In the routine of a day's work at the office, the following variables influence the dentist's productive power: (1) actions and reactions of patients; (2) abilities and activities of the auxiliary personnel, and (3) attitudes of other dentists and physicians who have to be consulted.

The optimal capacity of a practicing dentist consists of the routine amount of work performed day in and day out by utilization of his knowledge, experience, clinical and technical skill as well as psychologic management of patients. This workload has to be carried without causing physical or mental damage to the dentist.

The dentist's maximum capacity, which should be utilized only occasionally, consists in the amount of work produced by exceeding the normal limits.

The following conditions favor the performance of dental procedures with optimal capacity: (1) special qualification for the profession; (2) excellent background, pre dental education and dental training; (3) satisfactory working methods and technics, and (4) proper selection of dental instruments, apparatus, materials, drugs, office furniture and decoration. The "atmosphere" at the dental office influences considerably the capacity of the dentist.

The profession of dentistry should be selected by students who not only are interested in den-

tistry but also are able and willing to understand and help suffering patients and who possess the prerequisites for diagnosis and treatment (adaptability, self-control, self-confidence, compatibility and a desire for never-ending searching, probing and learning). Economic consideration in the selection of the dental profession should not be a primary factor.

Unfortunately, the urgent need for more dentists existing in all civilized countries has influenced dental schools to accept students who are definitely unsuited to study dentistry and after graduation to go into dental practice. Only a carefully selected student material will provide further advances in the dental sciences and specialties, thereby improving the dental and general health of the public.

A good dentist must be able to use his optimal capacity in spite of the many adverse circumstances (especially the standing posture). He must be mentally and physically relaxed and be aware of his unique responsibilities and potentialities not only to his patients but to the entire community. He is affected by anxiety, fatigue, emotion or disease and should, therefore, avoid utilizing his maximum capacity when performing routine procedures. Occasionally, however, specific situations will be encountered in dental practice which produce additional strain and stress, and require overexertion and, therefore, maximum capacity.

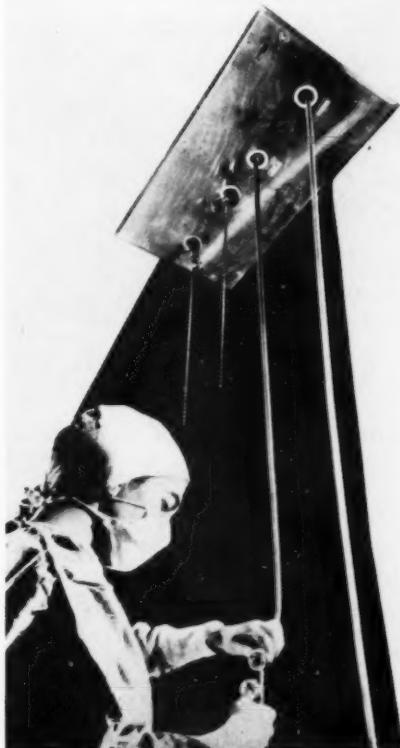
Proper adjustment and manipulation will often permit the dentist to perform dental procedures with minimum capacity which, in most instances, will be regarded by the patients as a satisfactory "optimum."

Leipzigerstrasse 139, Dresden N 30, Germany

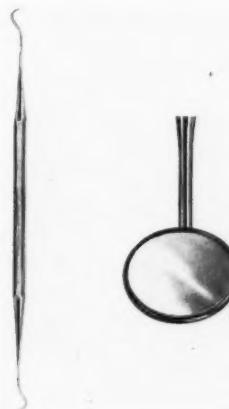
New equipment

The information reported here is obtained from manufacturers. Dental Abstracts does not assume responsibility for the accuracy of the information. The interested reader may direct his inquiry to the manufacturer.

Ceiling-mounted reels that provide safe, out-of-the-way storage of hoses for oxygen, nitrous oxide and vacuum and compressed air, are recommended for the offices of oral surgeons. Each color-coded hose can be used in any part of a room up to 15 feet from the ceiling outlet. When not in use, the hoses automatically retract. *National Cylinder Gas Division of Chemetron Corp., 840 N. Michigan Ave., Chicago 11, Ill.*



A "Cavette" Model 80 ultrasonic cleaner is said to clean dental and medical instruments with exceptional thoroughness and speed. The compact cleaner consists of a basic unit and different sizes of stainless steel tanks. A 2.12-quart tank is standard. Highly concentrated cleaning power can be obtained by using a small beaker. The 80-watt cleaner operates at 90 kilocycles. Literature is available. *Mettler Electronics Corp., 114 W. Holly St., Pasadena, Calif.*



A no. 3 double-end explorer is offered free with the purchase of six dental mirrors, either regular or front surface. Mirrors are available with cone socket or simple stem, in either 7/8 inch or 1 inch size. *Kerr Manufacturing Co., 6081 Twelfth St., Detroit 8, Mich.*



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